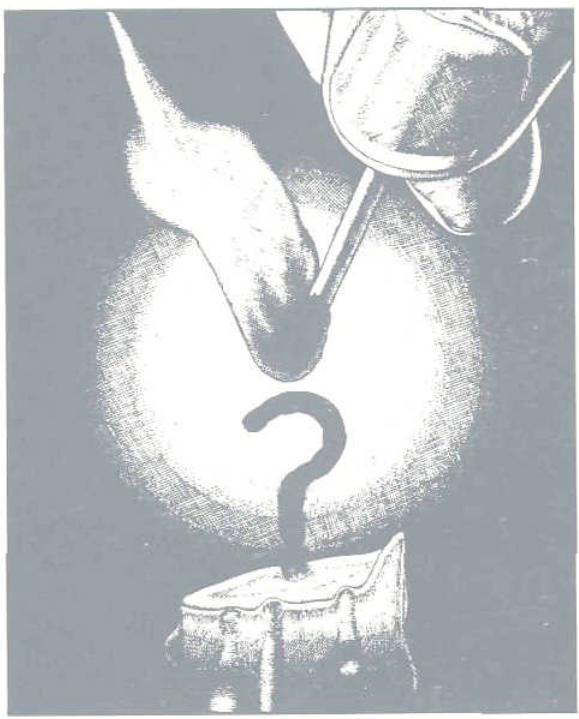
1976 10TH Anniversary 1986

the Skeptical Inquirer

SCIENCE AND THE PARANORMAL
Essays by Asimov, De Camp, Sagan, and Kurtz



Crashed-Saucer Claims / Creationist Evangelism
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VOL. X NO. 3 / SPRING 1986 $5.00
Published by the Committee for the Scientific Investigation of Claims of the Paranormal

the Skeptical Inquirer

THE SKEPTICAL INQUIRER is the official journal of the Committee for the Scientific Investigation of Claims of the Paranormal.

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Subscriptions, change of address, and advertising should be addressed to: THE SKEPTICAL INQUIRER, Box 229, Buffalo, NY 14215-0229. Old address as well as new are necessary for change of subscriber's address, with six weeks advance notice.

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Subscription Rates: Individuals, libraries, and institutions, $18.00 a year; back issues, $5.00 each (vol. 1, no. 1 through vol. 2, no. 2, $7.50 each).

Postmaster: THE SKEPTICAL INQUIRER is published quarterly. Spring, Summer, Fall, and Winter. Printed in the U.S.A. Second-class postage paid at Buffalo, New York, and additional mailing offices. Send changes of address to THE SKEPTICAL INQUIRER, Box 229, Buffalo, NY 14215-0229.

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Journal of the Committee for the Scientific Investigation of Claims of the Paranormal
Vol. X, No. 3 ISSN 0194-6730 Spring 1986

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News and Comment

Double-Blind Test of Astrology Avoids Bias, Still Refutes the Astrological Hypothesis

ASTROLOGERS WHO claim they can analyze a person's character and predict a person's life course just by reading the "stars" are fooling the public and themselves, University of California researcher Shawn Carlson has concluded in a unique double-blind test of astrology published in *Nature* (December 5, 1985). The controlled study was designed specifically to test whether astrologers can do what they say they can do. Carlson, a researcher at UC's Lawrence Berkeley Laboratory, found astrologers had no special ability to interpret personality from astrological readings. Astrologers also performed much worse in the test than they predicted they would, according to Carlson.

The study refutes astrologers' assertions that they can solve clients' personal problems by reading "natal charts," individual horoscopes cast according to the person's date, time, and place of birth. "It is more likely that when sitting face to face with a client, astrologers read clients' needs, hopes, and doubts from their body language," said Carlson, who is also a doctoral candidate in physics at UCLA and a professional magician who has himself performed "psychic ability" demonstrations.

Carlson's research involved 30 American and European astrologers considered by their peers to be among the best practitioners of their art.

The study was designed specifically to test astrology as astrologers define it. Astrologers frequently claim that previous tests by scientists have been based on scientists' misconceptions about astrology.

To check astrologers' claims that they can tell from natal charts what people are really like and how they will fare in life, Carlson asked astrologers to interpret natal charts for 116 unseen "clients." In the test, astrologers were allowed no face-to-face contact with their clients.

For each client's chart, astrologers were provided three anonymous personality profiles—one from the client and two others chosen at random—and asked to choose the one that best matched the natal chart. All personality profiles came from real people and were compiled using questionnaires known as the California Personality Inventory (CPI). The CPI, a widely used and scientifically accepted personality test,

measures traits like aggressiveness, dominance, and femininity from a long series of multiple-choice questions.

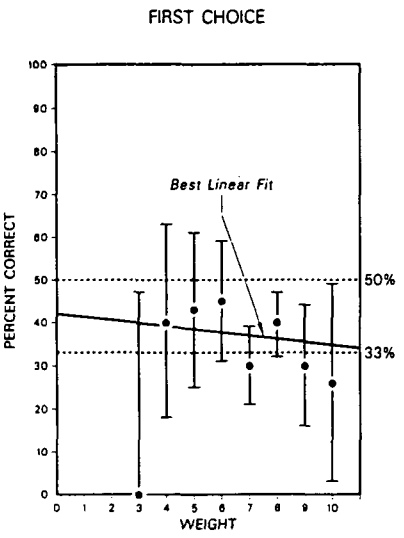
According to Carlson, the study strenuously attempted to avoid anti-astrology bias by making sure astrologers were familiar with the CPI and by incorporating many of the astrologers' suggestions. At the same time, to prevent testers from inadvertently helping astrologers during the test, the project was designed as a double-blind study where neither astrologers nor testers knew any of the answers to experimental questions.

Despite astrologers' claims, Carlson found those in the study could correctly match only one of every three natal charts with the proper personality profile—the very proportion predicted by chance.

In addition, astrologers in the study fell far short of their own prediction that they would correctly match one of every two natal charts provided. Even when astrologers expressed strong confidence in a particular match, they were no more likely to be correct, Carlson found.

Concludes Carlson:

> We are now in a position to argue a surprisingly strong case against natal astrology as practiced by reputable astrologers. Great pains were taken to insure that the experiment was unbiased and to make sure that astrology was given every reasonable chance to succeed. It failed. Despite the fact that we worked with some of the best astrologers in the country, recommended by the advising astrologers for their expertise in astrology and in their ability to use the CPI, despite the fact that every reasonable suggestion made by the advising astrologers was worked into the experiment, despite the fact that the astrologers approved the design and predicted 50% as the "minimum" effect they would expect to see, astrology failed to perform at a level better than chance. Tested using double-blind methods, the astrologers' predictions proved to be wrong. Their predicted connection between the positions of the planets and other astronomical objects at the time of birth and the personalities of test subjects did not exist. The experiment clearly refutes the astrological hypothesis.



Graph showing percentage correct vs. weight for astrologers' first-place choices in CPI-profile natal-chart matching. The best linear fit is consistent with the scientifically predicted line of zero slope. No significant tendency is shown for the astrologers to be more correct when they rate a CPI as highly matching a natal chart.

"A lot of people believe in astrology because they think they have seen it work," Carlson observed. He believes many astrologers are successful at their art because they draw important clues about clients' personalities and lifestyles from facial expressions, body language, and conscious or unconscious verbal responses. "When magicians use the same technique, they call it 'cold reading,' " said Carlson.

Based on his scientific findings, Carlson suggests many people would do better to spend their money on

trained psychology counselors. However, he disagrees with those who would like to see astrology outlawed. "People believed in astrology for thousands of years and no doubt will continue to do so no matter what scientists discover. They are entitled to their beliefs, but they should know that there is no factual evidence on which to base them."

"The astrologers' reactions so far have been pretty much what I expected," Carlson told the SKEPTICAL INQUIRER. "The astrologers whom I didn't test are saying that the test was not fair because I did not test them. Of course, if I had tested them instead, and they had failed, then the astrologers I actually tested would now be saying that the test was not fair because I did not test them.

"I attended an NCGR party—I was the only non-astrologer in the house—to discuss the research shortly after it was published. The discussion was, to put it politely, energetic. I have not yet received a serious scientific challenge to the paper." The newsletter of the American Federation of Astrologers Network published a response in January. "I was very disappointed to see that it largely consists of personal attacks," Carlson said. He said its few substantive criticisms are attributable to ignorance of his experiment, of the CPI, and of basic scientific methodology.

Carlson's study was supported by Richard Muller, professor of physics at UC Berkeley, and paid for by a general congressional research award.

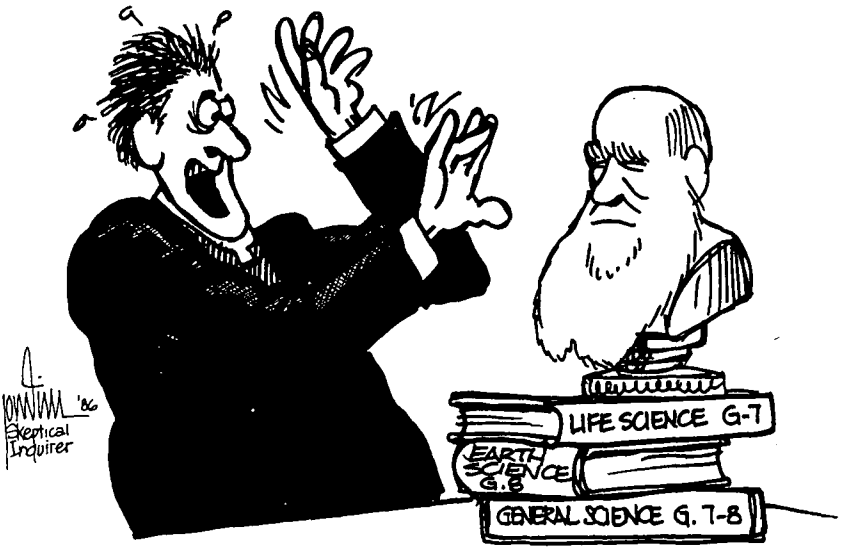
Evolution in Science Texts: Ups and Downs in California

THE CALIFORNIA Board of Education has acted to improve the quality of science textbooks by upgrading their coverage of evolution. But life scientists remained strongly disappointed with the books' shortcomings. The board in December approved the adoption of 10 new junior-high textbooks that give somewhat expanded emphasis to evolution. State school superintendent Bill Honig praised the action as a historic move to improve the quality of textbooks. Creationist Kelly Seagraves hinted at a court challenge.

A four-member committee of the board had approved the new books a day earlier after a lengthy hearing in which university science professors argued that the books still soft-pedal evolution and contain too many qualifiers about its being only a theory. William J. Bennetta, a consultant working to upgrade the books' coverage of evolution, said the revisions made introduced more errors than they eliminated. Most of the books were not altered extensively. Changes that were made avoided stating that evolution was broadly accepted among scientists, falling back on qualifers such as "many scientists feel." UC Berkeley paleontologist Kevin Padian listed 52 errors in 17 pages on genetics and evolution in one book. Factual errors may still be corrected, but there will be no more efforts to strengthen the discussion of evolution. Creationists were nevertheless upset because the books fail to mention the biblical story of creation.

"These books are probably the best junior high science texts that you will find in this country," said Honig after the December 12 action. The board decision will directly affect textbook sales in California next year, estimated to be worth $60 million to $120 million. But since the books are sold nationally, the action has national impact, both on science education and on the publishing business. California accounts for 11 percent of the $1.3-billion textbook market in the United States.

The actions came three months after the board unanimously rejected all the life-science, earth-science, physical-science, and general-science texts that



publishers had offered for use in grades 7 and 8. The board declared that no books would be adopted for those grades until they were revised to give proper treatment to the history of the earth, to organic evolution, to human reproduction, and to certain other matters. The publishers were told to come back to the board on February 1, 1986, with revisions. Creationists, working to get away with minimal revisions, successfully pushed the date for review forward to December 12.

Throughout the controversy, Honig emphasized that the issue is not a fight of science vs. religion but a fight for quality. He has also pointed out that the issue is not whether evolution should be taught but how well it should be taught.

"The real impact of the board's action," he wrote in the *Los Angeles Times* (October 6, 1985), "is a clear message that if we are going to teach science or any other subject, we are going to insist that it be taught right. Our youth cannot understand modern biology without an appreciation of the theory of evolution. . . ."

The initial board action, on September 13, was widely praised by educators and newspaper editorialists, but California fundamentalists began a mail campaign vilifying the decision and threatening political reprisals. Many of their political threats were directed at Honig, an elected official. Pro-science educators then began their own campaign, urging support for the stand of Honig and the Board of Education.

(For a detailed critique of some of the textbooks in their pre-revised state, see William J. Bennetta, "Faking It," *Pacific Discovery,* California Academy of Science, Oct.-Dec. 1985. See also Bennetta's article on events that led to the board's September decision, in *Creation/Evolution Newsletter,* vol. 5, no. 4. Also see related articles by Bennetta and Sanford Berman listed in "Articles of Note," p. 282).

—Kendrick Frazier

Psychics' '85 Forecasts: Slightly Off the Mark

PRINCE CHARLES was not trampled by a herd of elephants while

on safari, Lee Majors did not go into space, measles did not become extinct, and extraterrestrials did not contact the earth. These are only a few of the specific predictions for 1985 by well-known "psychics" that failed to happen, according to the Bay Area Skeptics.

In their eagerness to make attention-catching predictions, the group notes, most "professional psychics" did much worse in predicting 1985 than the average news reporter or person following the news could have done.

Of hundreds of published predictions, many were so vague that it is impossible to tell if they came true or not. Many others were fogged up with qualifiers like "may" or "might" to lessen the danger of being wrong. But of those predictions that were specific enough to be judged true or false, only a few came true, and those were vastly outnumbered by predictions that were spectacularly wrong.

While "psychics" made many vague predictions that were almost bound to happen, such as "major floods" or "a mine disaster," and many bizarre predictions that were wide of the mark, there were no correct predictions of actual events that were both very specific and very surprising. Somehow all of the well-known "psychics" failed to guess the genuinely surprising news stories of 1985: the major volcanic eruption in Colombia, the hijacking of a cruise ship and the capture of the hijackers by the U.S., President Reagan's cancer surgery, and the record-breaking rally on Wall Street. If "psychic powers" were real, these major news events should have been predicted independently by many supposed "psychics."

The Bay Area Skeptics was the first local group of its kind in the United States. Since its founding, many other metropolitan areas have seen local skeptics groups working to encourage more objective evaluation of supernatural claims. All the local groups share the goals of CSICOP.

Pseudoscience and the Mexican Earthquake

AMONG THE MANY calamities brought by the violent earthquakes that shook Mexico City last September was the appearance of a legion of pseudoscientific "experts" attempting to fish up some kind of profit out of the disaster.

One group, the National Seismic Investigation Center, headed by a certain J. Cisneros, announced just after the tragedy that it had forecast the earthquakes and denounced the authorities for failing to heed the warning; of course these so-called experts produced no proof of this statement. Furthermore, Cisneros prophesied that a number of even more violent quakes would practically erase Mexico City from the map sometime between November 1985 and April 1986.

The group claims to have developed a "mathematical model" that accurately forecasts all kinds of quakes. No information has been offered about the nature of the wondrous model.

Cisneros says his organization has managed to set up a kind of seismic "early-warning system" using gifted animals, radiesthetic pendulums, and a mysterious detector made out of chalk.

Others who managed to turn the disaster into a bonanza were the Scientologists. A "rescue" team of the late L. Ron Hubbard's true believers stormed many of the collapsed buildings, handing out booklets to everyone in sight and practicing Dianetic "first aid." This technique includes the immediate manipulation and adjustment of the injured victim's spinal cord (which, of course, is the last thing anyone should do to an injured person, trapped by collapsing concrete and masonry). They also recommend reciting positive thoughts to the unconscious victims.

—Mario Méndez Acosta
Mexican Branch, CSICOP

Tests Show Small Samples Of Shroud Could Be Dated

IF AUTHORITIES of the Catholic church ever allow a small sample of cloth from the shroud of Turin to be dated by modern scientific means, at least six laboratories in the United States and Europe can provide reliable results, a new study shows.

Certain shroud proponents claim it is the burial cloth of Jesus and that the image on it was somehow transferred from his body onto the cloth. Critics say the image is the work of an artist, probably in the fourteenth century. (See *SI*'s three-article report, Spring 1982.)

Recent carbon-dating techniques using accelerators now make it possible to date a material when only a very small sample of it is made available. The accelerator technique allows scientists to count the number of radioactive carbon-14 atoms in a sample directly rather than measuring their decay rate. This enables accurate dating from only minute samples.

The new study, reported at the meeting of the Division of Nuclear

CSICOP's Tenth Anniversary

This is the 10th Anniversary Year for CSICOP and the SKEPTICAL INQUIRER. The Committee for the Scientific Investigation of Claims of the Paranormal was founded April 30–May 1, 1976, at a conference at the State University of New York at Buffalo. The first issue of the SKEPTICAL INQUIRER (temporarily called *The Zetetic*) appeared that Fall/Winter. To mark this tenth-anniversary year, we invited some prominent CSICOP Fellows and Scientific Consultants to offer their thoughts on any subject of relevance to science and the paranormal. These anniversary essays begin on page 212. They will continue in the Summer issue.

Physics of the American Physical Society at Pacific Grove, Calif., Oct. 28-30, 1985, compared results of tests at six such laboratories.

These laboratories, using either accelerator mass spectrometry or small gas counters, performed blind measurements of the ratios of radioactive carbon-14 to normal carbon-12 in textile samples supplied by the British Museum as an intercomparison test of the ability to date small samples.

The six laboratories were those at AERE Harwell (England), the University of Arizona, Brookhaven National Laboratory, Oxford University, the University of Rochester, and Zurich/Bern.

One sample was Egyptian linen from the First Dynasty. The six-laboratory average for it was 4,298 plus or minus 160 years B.P. (before the present). The other sample was Peruvian cotton of the Late Intermediate Period. The six-laboratory average was 588 ± 134 years. These ages agree with dates ascribed to the materials by the museum.

H. E. Gove and colleagues from the University of Rochester and the U.S. Geological Survey reported the results of the study.

The six laboratories had previously indicated a willingness to radiocarbon-date the shroud of Turin, the authors note. "This test establishes that all six are qualified to do so if samples become available."

For more about the dating technique, see "Radiocarbon Dating by Accelerator Mass Spectrometry," by Robert E. M. Hedges and John A. J. Gowlett, in the January 1986 *Scientific American.*

—*K.F.*

Book Suit

MORTON WALKER, D.P.M., author of *Chelation Therapy* (critically reviewed in our Fall 1985 issue), has been accused in a Michigan court of practicing medicine without a license and of conspiring with others, including his publisher, to steal from readers of the book.

The publisher, M. Evans in New York, has counterclaimed against Walker and is withholding between $80,000 and $100,000 in royalties from a second Walker book in order to pay the corporation's legal expenses. Walker in turn has filed a $10-million suit against the attorney who brought the original suit against him, claiming champerty (the use of the courts for a lawyer's own public relations purposes) and legal malpractice. Walker, who describes himself as a "hard-nosed medical journalist" and claims an 82-percent success-rate for chelation in atherosclerosis cases, appealed for help from writers' organizations.

—*K.F.*

CSICOP Tenth Anniversary Fund
B. F. Skinner, Honorary Chairman

B. F. Skinner has agreed to serve as Honorary Chairman of the CSICOP Tenth Anniversary Fund. Dr. Skinner notes that he is extremely busy with research and writing and seldom takes on additional projects, but he feels the work of CSICOP is so important and unique that he is breaking his general rule.

Similarly, there are many calls upon each of us for our time and financial resources, but CSICOP is at a crossroads and really needs a major infusion of support to ensure its long-term viability. The Committee is small, but its influence has been impressive. One of the major reasons for this is the catalysis of enthusiastic support by *SI* readers who take initiatives ranging from lobbying local schoolboards to founding regional organizations and new publications.

CSICOP and the SKEPTICAL INQUIRER will be ten years old in 1986. Thanks to your subscriptions and contributions from supporters, we provide a much-needed skeptical voice in the midst of a cacophony of sensationalized and credulous reports of old and new paranormal claims. We sponsor conferences, have greatly expanded our outreach to the news media, increased our support for the investigation of paranormal claims, and are fielding an increasing flow of inquiries from the media and the general public. The SKEPTICAL INQUIRER is the *only* magazine of its kind; we think it does an essential job.

We plan to develop a definitive library/archive/database on paranormal claims, to establish liaisons with other organizations, to expand our program of providing speakers to public meetings and interviewees for the mass media, and to produce audiovisual resources for use in schools. We must upgrade our information resources and our ability to disseminate this information if we are to achieve CSICOP's potential for constructive influence on public thought and scientific research.

We will be very grateful for your tax-deductible contribution, large or small. The Tenth Anniversary Fund will guarantee our future.

Paul Kurtz, *Chairman*

Executive Council: James Alcock, Kendrick Frazier, Martin Gardner, Ray Hyman, Philip J. Klass, Lee Nisbet, James Randi

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MARTIN GARDNER

Notes of a Psi-Watcher

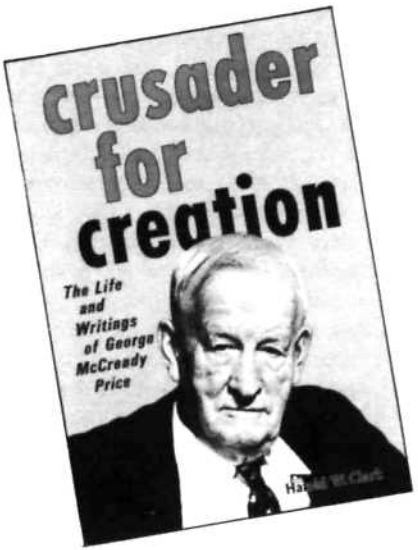
Modern Creationism's Debt to George McCready Price

ANDREW WHITE'S monumental *History of the Warfare of Science with Theology in Christendom* was published in 1896. By "theology," White meant the doctrines of Christian conservatives who believe the Bible to be literally true in its history, and therefore an infallible guide on all questions where science and the Scriptures come in conflict.

A few decades later, the battle for a broader interpretation of the Bible, one that would allow the ancient writers to be wrong on scientific topics, seemed to have been won. At least it seemed won in mainstream churches. Fundamentalism became a minority viewpoint, confined largely to southern churches whose members and clergy were poorly educated, to Pentecostal denominations, and to such fundamentalist sects as Jehovah's Witnesses and Seventh-Day Adventism.

Then, a few decades later, an amazing thing happened. The liberal churches began to decline in attendance, while the fundamentalist churches began to grow. Even students in secular colleges were caught up in the trend. As we all know, the great fundamentalist-evangelical resurgence (the two groups are hard to distinguish) is still on the upswing and rapidly gaining political clout. Fundamentalist pressures on politicians in several states have led to bitter court battles over the teaching of evolution in schools and colleges. Major publishers of science textbooks, motivated by nothing higher than making money, found it necessary to water down references to evolution as a "fact" and to present it, if at all, as unconfirmed theory. Even President Reagan went on record as favoring the teaching of creationism in public schools. If any sociologist predicted this revival of fundamentalist theology in America, I am not aware of it. Indeed, predictions were just the reverse—that fundamentalism was dying.

Lessons learned from the famous "monkey trial" in Dayton, where William Jennings Bryan came off as a seedy ignoramus in his clashes with Clarence Darrow, have vanished in the wind so far as fundamentalist leaders are concerned. During the trial Bryan relied heavily on the work of America's top creationist of the day, George McCready Price (1870-1963). There were, of course, a few other fundamentalists who were writing books and



Clark's book about his one-time friend and teacher.

pamphlets attacking evolution, but these without exception were on a scholarly level far below Price. Price wrote clear, persuasive prose and seemed extremely well informed in all areas of science, especially geology. His *New Geology* (1923), a college textbook of 726 pages, is in my opinion one of the great classics of modern bogus science. As crazy as its theories are, about the origin of the earth and its fossils, I rate it as cuts above the fantasies of Velikovsky. (Velikovsky, by the way, has many favorable references to Price in *Earth in Upheaval.*) One needs to know only a little astronomy and physics to see that Velikovsky's cosmology is hogwash; one has to know a lot about geology to penetrate Price's ingenious arguments.

Although Price is a name unfamiliar now to the general public, it is his work that underpins the writings of the country's top creationist, Henry M. Morris. Trained as a hydraulics engineer, Morris is founder and president of the Institute for Creation Research, the most influential of several institutions that pretend to be doing serious empirical studies that discredit evolution and support a creationist model. Morris is the author of numerous books, articles, and pamphlets and a tireless crusader for the creationist cause. *The Genesis Flood* (1961), which he coauthored with John Whitcomb, Jr., is by all odds the most significant attack on evolution to have been published since the Scopes trial of 1925.

You will have to search hard through this 518-page tome to find a single Priceless idea. The arguments are all from Price, as are even some of the book's pictures, yet Price is mentioned only in passing. Why? The reason is easy to understand. Price was a devout Seventh-Day Adventist. Morris is a Southern Baptist. Today's fundamentalist leaders, including such famous preachers as Billy Graham, Jerry Falwell, Pat Robertson, and others, do not like to give credit for their arguments against evolution to a member of a sect that teaches doctrines they consider false.

In light of this reluctance, I was pleased to see that Morris, in his recent *History of Modern Creationism* (1984), speaks highly of Price, and of the enor-

mous influence Price's writings had on him:

> Although I never met George McCready Price, his tremendous breadth of knowledge in science and Scripture, his careful logic, and his beautiful writing style made a profound impression on me when I first began studying these great themes, back in the early 1940s.
>
> I first encountered his name in one of Harry Rimmer's books (see the discussion of Rimmer later in this chapter) and thereupon looked up his book *The New Geology* in the library at Rice Institute, where I was teaching at the time. This was in early 1943, and it was a life-changing experience for me. I eventually acquired and read most of his other books as well.

Price's knowledge of geology was entirely self-taught. After carefully studying the writings of his church's inspired prophetess, Ellen Gould White, and all the geological literature he could get his hands on, Price concluded that the most basic of all arguments for evolution rested on circular reasoning. Evolutionists tell us that fossils show a steady progression from simple life forms in the oldest sedimentary rocks to more complex forms in beds of a later date. And how do geologists know the ages of the strata? Why, said Price, they date the beds by the kinds of fossils they contain!

In Price's theory, based on Mrs. White, who in turn based her creationism on earlier theories, all fossil-bearing strata are of the same age. The fossils are records of life that perished during Noah's flood. The earth, according to Price, was created in six solar days, just as Genesis reveals. A few thousand years later the great flood destroyed all living things except those preserved in Noah's Ark. Ocean life would tend to be captured by the first beds of sediment laid down by the flood. Mammals would be in higher strata; and birds (who kept flapping about), in still higher layers. In general, however, one would expect to see a mixture of all types of fossils in the same beds. If that is the case, there should be outcrops of rock here and there with fossils in an upside-down order with respect to evolutionary theory. This, Price maintained, is exactly what we *do* find.

Price formulated what he called the "great law of conformable stratigraphic sequences. . . . Any kind of fossiliferous beds whatever, 'young' or 'old,' may be found occurring conformably on any other fossiliferous beds, 'older' or 'younger.' " Early in his career Price offered a thousand dollars "to anyone who will . . . show me how to prove that one kind of fossil is older than another."

The New Geology contains many photographs of upside-down outcrops. Geologists try to get around these anomalies, Price argued, by inventing totally imaginary faults and folds in the strata to explain how the fossils got into the wrong order. It is here Price discloses his vast ignorance, but how is a reader to know without some background in paleontology? Geologists have all sorts of ways to determine when faulting and folding have occurred. Thrust faults display the planes along which strata slid. If you find fossil trilobites on their backs, you know a fold has turned over the bed. All of Price's (and Morris's) cherished instances of wrong-order fossils are easily explained by historical events that can be identified by a variety of techniques—not to mention modern methods, getting more accurate every year, for dating the ages of rocks in ways that have nothing to do with faulting or folding or evolutionary theory. If interested, you can learn more about Price and his simple-minded views in my *Fads and Fallacies in the Name of Science,* and in the only

biography of Price, *Crusader for Creation* (1966), by his one-time friend and student Harold W. Clark. Another excellent reference on Price, as well as on Morris and other modern creationists, is "Creationism in 20th-Century America," by Ronald L. Numbers, in *Science* (Nov. 5, 1982, pp. 538-544).

In the forties a violent quarrel erupted between Price and Clark, then teaching biology at a small Adventist college in California. As Numbers tells it, Clark became convinced that Price's *New Geology* was out of date and inadequate as a college text, although Clark still believed in a six-day creation and a universal flood. Price accused Clark of suffering from "the modern mental disease of universityitis" and of seeking the favor of "tobacco-smoking, Sabbath-breaking, God-defying" evolutionists. "Price kept up his attack for the better part of a decade," Numbers tells us, "at one point addressing a vitriolic pamphlet, *Theories of Satanic Origin,* to his erstwhile friend and fellow creationist."

Price had occasional lapses into modesty, but there are no such lapses in the writings of Morris. Like all fundamentalists, he believes that Jesus is about to return to earth but that, before he does, it will become clear to everyone that evolution is a false doctrine coming straight from the Devil. Nothing can shake Morris's conviction that the entire universe was created about ten thousand years ago, in seven literal days. He knows this not only because the Bible reveals it, and God cannot lie, but also because, he is firmly persuaded, there is now *more* scientific evidence to support such a model than evidence to support an evolutionary model! Any scientist or religious leader who thinks otherwise, in Morris's primitive theology, is doing the work of Satan. I find it a bit frightening that a British edition of *The Genesis Flood* was published in 1969 and that (as Numbers reveals) by 1980 Morris's books had been translated into Chinese, Czech, Dutch, French, German, Japanese, Korean, Portuguese, Russian, and Spanish. "Creationism," Numbers concludes his paper, "had become an international phenomenon."

If you would like to know the best arguments available today for creationism, my advice is to skip the derivative scribblings of Morris and his friends. Go directly to the source. Try to locate a copy of Price's long-out-of-print masterpiece. I wish some publisher would reprint it, with an introduction and annotations by a paleontologist of the stature of Stephen Jay Gould. I have a feeling, though, that Gould would consider this more a waste of time than I did the writing of this column. •

1986 CSICOP Conference

SCIENCE AND PSEUDOSCIENCE

April 25 and 26, 1986

at the University of Colorado at Boulder

Keynote Address by

STEPHEN JAY GOULD

Friday, April 25

Glenn Miller Ballroom, UMC Building

2:00-5:30 P.M.

"CSICOP's Tenth Anniversary": Paul Kurtz, CSICOP chairman, professor of philosophy, State University of New York at Buffalo

"Psi Phenomena and Quantum Mechanics"

Moderator: Ray Hyman, professor of psychology, University of Oregon

Murray Gell-Mann, professor of physics, California Institute of Technology

Helmut Schmidt, senior research associate, Mind Science Foundation

"The Elusive Open Mind—Ten Years of Negative Research in Parapsychology": Susan Blackmore, Visiting Fellow, Brain and Perception Laboratory, University of Bristol, England

"The Condon UFO Study—A Trick or a Conspiracy?" Philip J. Klass, senior editor, *Aviation Week and Space Technology*

8:00 P.M.

Keynote Address

Stephen Jay Gould

A well-known author and CSICOP Fellow, Stephen Jay Gould is Alexander Agassiz Professor of Zoology and Curator of Invertebrate Paleontology, Museum of Comparative Zoology, Harvard

Saturday, April 26

Chemistry 140, University of Colorado

9:00 A.M.-12 NOON

"Reincarnation and Life After Life"

Moderator: James E. Alcock, professor of psychology, York University, Toronto

"Hypnosis and Reincarnation—Confessions of a Past-Life Therapist": Leo Sprinkle, professor of counseling services, University of Wyoming.

"Hypnotic Regression": Nicholas S. Spanos, professor of psychology, Carleton University, Ottawa

"Near-Death Experiences": Ronald K. Siegel, psychopharmacologist, Veterans Administration, Los Angeles

"Past Tongues Remembered?": Sarah Grey Thomason, associate professor of linguistics, University of Pittsburgh

2:00 P.M.-5:00 P.M.

"Evolution and Science Education"

Moderator: Lee Nisbet, associate professor of philosophy, Medaille College

Paul MacCready, chairman, AeroVironment, Inc., Kramer Award recipient

William V. Mayer, professor of biology, University of Colorado

Eugenie C. Scott, professor of anthropology, University of Colorado

Saturday Evening

Hilton Harvest House Grand Ballroom

Awards Banquet and Magic Show

(by reservation only)

6:00 P.M.

Cash Bar

7:00 P.M.

Dinner

Award Presentations

Paul Kurtz, CSICOP chairman

Kendrick Frazier, editor, SKEPTICAL INQUIRER

In Praise of Reason Awards
Responsibility in Media Award
CO-RAP/CSICOP Student Science Contest Award

8:30 P.M.

"Magic and Superstition"

James Randi, magician and author

Henry Gordon, magician and columnist, *Toronto Star*

Douglas Stalker (Captain Ray of Light), Guru to the Greats, associate professor of philosophy, University of Delaware

Robert Steiner, magician and chairman of the Bay Area Skeptics

This conference is sponsored by the Committee for the Scientific Investigation of Claims of the Paranormal, the Committee on the History and Philosophy of Science at the University of Colorado, and the Colorado Organization for a Rational Alternative to Pseudoscience.

Registration Fee: $55.00 (meals and accommodations not included). Saturday Awards Banquet and Magic Show: $22.50 per person. Please use the form below. Pre-registration advised.

Discount Airfares: American Airlines (800-433-1790) to Denver. Ask for Convention Desk, Star file No. S61555, and mention CSICOP Conference. (Suggest Boulder Airporter Shuttle Limousine Service between Denver Stapleton Airport and hotels in Boulder.)

Accommodations: Ask for CSICOP Conference discount. Hilton Harvest House, 1345 28th St., Boulder 80302 (303-443-3850), $55 single, $65 double. (Special rates also available at Best Western Boulder Inn, 770 28th St., Boulder 80303 [303-449-3800], and Skyline Motel, 1100 28th St., Boulder 80302 [303-443-2650].)

Bus Transportation: Round-trip between Hilton Harvest House and university (15-minute walk), includes Friday and Saturday, $5.00 per person.

For further details, contact Mary Rose Hays, CSICOP, Box 229, Buffalo, NY 14215 (716-834-3222). Media representatives should contact Barry Karr.

1986 CSICOP Conference, P.O. Box 229, Buffalo, NY 14215-0229

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Enclosed please find my check or money order (payable to CSICOP Conference) to cover:

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☐ $22.50 Awards Banquet and Magic Show for _____ person(s) $_____

☐ $5.00 for _____ nonregistrant(s) for Stephen Jay Gould Keynote Address $_____

☐ $5.00 bus transportation fee for _____ person(s) $_____

Total enclosed $_____

Charge my ☐ Visa ☐ MasterCard #_____ Exp. _____

☐ I will not be able to attend, but please accept the enclosed contribution for $_____ to help cover the cost of the conference and future special events.

NAME _____
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CITY _____ STATE _____ ZIP _____

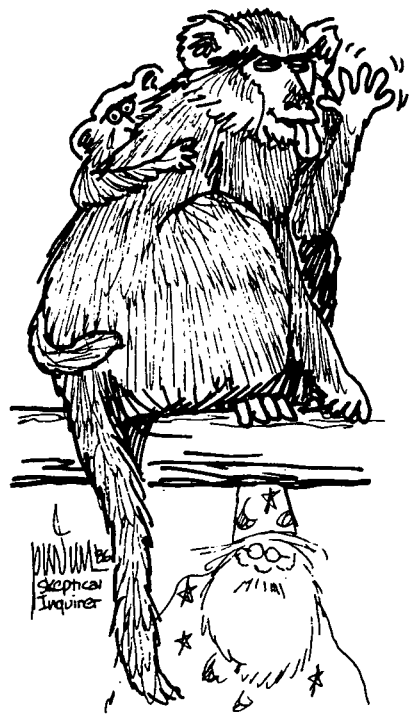
ROBERT SHEAFFER

Psychic Vibrations

FOR SEVERAL months a pair of escapees from the San Francisco zoo made monkeys of the local psychic community and, some would say, one of the members of the city Board of Supervisors as well. A female patas monkey and her 4-month-old baby escaped from the zoo's new Primate Center last July 11. Because the monkeys can move very quickly and are adept at foraging nuts and fruits high in backyard treetops, they evaded attempts at recapture.

Enter San Francisco City Supervisor Louise Renne. While on a visit to Cork, Ireland, she was told by a city councilman there that, when a monkey escaped from the zoo in Cork, "they couldn't find a trace of him" until a psychic was called in, who allegedly located the monkey's hiding place within minutes. Renne, obviously believing the San Francisco psychic community to be second to none, issued a call for help to local psychics in tracking down the monkeys.

Assistance was immediately forthcoming. Harold Hooper, a local seer who claims to have helped the police find bodies and who lives in the area where the monkeys had last been spotted, was among the first to respond. He reported that he feared the baby monkey had been run over by his own son riding his "Big Wheel" tricycle, although the victim of the supposed accident was nowhere to be seen. Another man called in who declined to identify himself, claiming to be a psychic from nearby Stanford University. After two phone calls to Renne's office requesting a map of the area and other information, he called back with his finding: The monkeys were hanging out



in a Sunset District bar, eating ravioli. One caller, who thought the whole matter was absurd, asked, "Are you people idiots or what?" Renne's aide replied, "No, we're not. This is the Board of Supervisors."

Throughout the escapade, zoo officials emphasized that psychic assistance was *not* required. "We don't need a psychic. We've called in a primatologist and an expert trapper," said zoo spokeswoman Ellen Newman. Besides, she said, the problem was not *finding* the monkeys, the problem was *catching* the monkeys. Despite the proximity of several world-class parapsychology research centers, including SRI, Delphi Associates, and John F. Kennedy University, not one shred of useful extrasensory information was received. The escapees continued to romp in the city's treetops for a month, until the zoo's trappers successfully lured them into a cage baited with fresh fruit.

* * * * *

The case of an alleged UFO landing, alien contact, and Men In Black harassment in the Rendlesham Forest, near the U.S. Air Force base in Suffolk, England, in December 1980, continues to intrigue UFO believers and to greatly entertain the skeptics. According to initial reports, a brilliant light was seen hovering in the woods, leaving behind markings on the ground. This was investigated by Ian Ridpath of CSICOP/U.K., who found that the position of the reported light coincided exactly with the beam from the lighthouse at Orford Ness and that the ground markings attributed to the UFO were in fact rabbit diggings, which could be seen scattered throughout the woods.

Then stories began circulating that contact had been made between UFO aliens and U.S. Air Force personnel. The initial source of these stories was an anonymous U.S. airman calling himself "Art Wallace," who has since been revealed to be former airman Larry Warren. MUFON, the largest UFO Group in the United States, strongly supports the case, even though MUFON director Walt Andrus declined Philip J. Klass's offer to help fund a polygraph test for Warren, admitting that Warren would probably fail if asked to reconfirm his earlier statements, since he "tends to embellish his story" each time it is told. J. Allen Hynek, reviewing a book on the incident (*Sky Crash: A Cosmic Conspiracy* by Brenda Butler, Dot Street, and Jenny Randles) in his *International UFO Reporter,* said that the Rendlesham case "may come to rank as one of the most significant UFO events of all time." He said the book was "destined to become a classic work in the UFO literature," which it may, but not for the reasons he suggests.

When UFO commentator and gadfly James Moseley shocked and upset many readers of his newsletter, *Saucer Smear,* by announcing that he was "losing the faith," the well-known UFO and Fortean researcher Jerome Clark suggested that he might regain some of his lost "faith" if he were to look into a really excellent UFO case, such as Rendlesham. Moseley did, and the result eroded his confidence in UFOlogy even further. He found that two British researchers from the Swindon Centre for UFO Research and Investigation made a brief preliminary investigation and found five major discrepancies in the published reports. Moseley also found that MUFON appeared to be keeping damaging information about the case from its members and now refers to the whole matter as "RendleSHAM." Jerome Clark, however, reviewing *Sky Crash* for *Fate,* says that "this story is different" from other UFO yarns, being based upon "a large body of testimony." He concludes that "something very important, it is clear, took place in Rendlesham forest late in

1980," providing yet another illustration of how UFO proponents cling to implausible tales of saucer crashes and contact, even as the pillars supporting their claims crumble at their feet.

* * * * *

The *Wall Street Journal* reports—believe it or not—that the supermarket tabloid *National Enquirer* is "going straight—or at least going straighter." It seems that the *Enquirer* is having trouble selling ads to large national advertisers because of the perception that its readers, while easily persuaded, are not exactly affluent and couldn't afford to buy advertisers' products even if they wanted to. To project a more "upscale" image to its advertisers, and hopefully snare more affluent readers, the *Enquirer* reportedly will be publishing less celebrity gossip and fewer sensationalized stories about UFOs and the like. Owner Generoso Pope says that the paper has no choice but to be "groping" toward a new identity because of the crowded field for gossip sheets and the increasing cost of defending against libel lawsuits. •

A Reminder . . .

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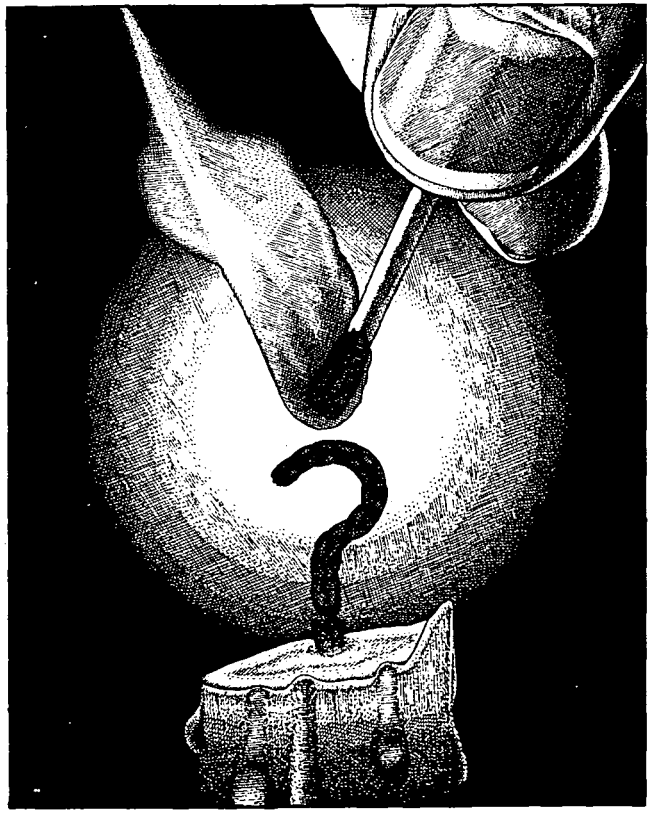
Kendrick Frazier, Editor, 3025 Palo Alto Dr. N.E., Albuquerque, NM 87111

Inquiries concerning CSICOP programs or policies should be addressed to Dr. Paul Kurtz, chairman, at the Buffalo address.

SCIENCE AND THE PARANORMAL

The Committee for the Scientific Investigation of Claims of the Paranormal was founded in Buffalo, New York, April 30, 1976. In observance of this tenth anniversary year, we invited several of our prominent Fellows to share with our readers their thoughts on any aspect of science and the paranormal. The first four essays follow. Others will appear in the Summer issue.



The Perennial Fringe

Isaac Asimov

I DOUBT THAT any of us really expects to wipe out pseudoscientific beliefs. How can we when those beliefs warm and comfort human beings?

Do you enjoy the thought of dying, or of having someone you love die? Can you blame anyone for convincing himself that there is such a thing as life-everlasting and that he will see all those he loves in a state of perpetual bliss?

Do you feel comfortable with the daily uncertainties of life; with never knowing what the next moment will bring? Can you blame anyone for convincing himself he can forewarn and forearm himself against these uncertainties by seeing the future clearly through the configuration of planetary positions, or the fall of cards, or the pattern of tea-leaves, or the events in dreams?

Inspect every piece of pseudoscience and you will find a security blanket, a thumb to suck, a skirt to hold. What have we to offer in exchange? Uncertainty! Insecurity!

For those of us who live in a rational world, there is a certain strength in understanding; a glory and comfort in the effort to understand where the understanding does not as yet exist; a beauty even in the most stubborn unknown when it is at least recognized as an *honorable* foe of the thinking mechanism that goes on in three pounds of human brain, one that will gracefully yield to keen observation and subtle analysis, once the observation is keen enough and the analysis subtle enough.

Yet there is an odd paradox in all this that amuses me in a rather sardonic way.

We, the rationalists, would seem to be wedded to uncertainty. We know that the conclusions we come to, based, as they must be, on rational evidence, can never be more than tentative. The coming of new evidence, or of the recognition of a hidden fallacy in the old evidence, may quite suddenly overthrow a long-held conclusion. Out it must go, however

Isaac Asimov is author of more than 330 books in the fields of science, science fiction, history, literature, and so on. He is a CSICOP Fellow and an SI *Consulting Editor.*

attached to it one may be.

That is because we have *one* certainty, and that rests not with any conclusion, however fundamental it must seem, but in the process whereby such conclusions are reached and, when necessary, changed. It is the scientific process that is certain, the rational view that is sure.

"Inspect every piece of pseudoscience and you will find a security blanket, a thumb to suck, a skirt to hold. What have we to offer in exchange? Uncertainty! Insecurity!"

The fringers, however, cling to *conclusions* with bone-crushing strength. They have no evidence worthy of the name to support those conclusions, and no rational system for forming or changing them. The closest thing they have to a process of reaching conclusions is the acceptance of statements they consider authoritative. Therefore, having come to a belief, particularly a security-building belief, they have no other recourse but to retain it, come what may.

When we change a conclusion it is because we have built a better conclusion in its place, and we do so gladly—or possibly with resignation, if we are emotionally attached to the earlier view.

When the fringers are faced with the prospect of abandoning a belief, they see that they have no way of fashioning a successor and, therefore, have nothing but vacuum to replace it with. Consequently, it is all but impossible for them to abandon that belief. If you try to point out that their belief goes against logic and reason, they refuse to listen and are quite likely to demand that you be silenced.

Failing any serviceable process of achieving useful conclusions, they turn to others in their perennial search for authoritative statements that alone can make them (temporarily) comfortable.

I am quite commonly asked a question like this: "Dr. Asimov, you are a scientist. Tell me what you think of the transmigration of souls?" Or of life after death, or of UFOs, or of astrology—anything you wish. What they want is for me to tell them that scientists have worked out a rationale for the belief and now know, and perhaps have always known, that there is some truth to it.

The temptation is great to say that, as a scientist, I am of the belief that what they are asking about is a crock of unmitigated nonsense—but that is just a matter of supplying them with another kind of authoritative statement, and one they won't under any circumstances accept. They will just grow hostile.

Instead, I invariably say, "I'm afraid that I don't know of a single scrap of scientific evidence that supports the notion of transmigration of souls"—or whatever variety of fringe they are trying to sell.

This doesn't make them happy, but unless they can supply me with a piece of credible scientific evidence—which they never can—there is nothing more to do. And who knows, my remark might cause a little germ of doubt to grow in their minds, and there is nothing so dangerous to fringe beliefs as a bit of honest doubt.

Perhaps that is why the more "certain" a fringer is, the more angry he seems to get at any expression of an opposing view. The most deliriously certain fringers are, of course, the creationists, who presumably get the word straight from God by way of the Bible that creationism is correct. You can't get a more authoritative statement than that, can you?

I get furious letters from creationists occasionally, letters that are filled with opprobrious adjectives and violent accusations. The temptation is great to respond with something like this: "Surely my friend, you know that you are right and I am wrong, because God has told you so. Surely, you also know that you are going to heaven and I am going to hell, because God has told you that, too. Since I am going to hell, where I will suffer unimaginable torments through all of eternity, isn't it silly for you to call me bad names? How much can your fury add to the infinite punishment that is awaiting me? Or is it that you are just a little bit uncertain and think that God may be lying to you and you would feel better to apply a little torment of your own (just in case he *is* lying) by burning me at the stake, as you could have in the good old days when creationists controlled society?"

However, I never send such a letter. I merely grin and tear up the one I got.

But, then, is there nothing to fight? Do we simply shrug and say that the fringers will always be with us and we might just as well ignore them and simply go about our business?

No, of course not. There is always the new generation coming up. Every child, every new brain, is a possible field in which rationality can be made to grow. We must therefore present the view of reason, not out of a hope of reconstructing the deserts of ruined minds that have rusted shut, which is all but impossible—but to educate and train new and fertile minds.

Furthermore, we must fight any attempt on the part of the fringers and irrationalists to call to their side the force of the state. We cannot be defeated by reason, and the fringers don't know how to use that weapon anyway; but we can be defeated (temporarily, at any rate) by the thumbscrew and the rack, or whatever the modern equivalents are.

That we must fight to the death. •

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The Uses of Credulity

L. Sprague de Camp

WE DEBUNKERS have long lamented the invincible willingness of our fellow primates to believe in the absence of evidence, or even contrary to evidence. Suppose we could teach everybody to think logically all the time and never to believe without evidence, thus slaying our pet dragon of pseudoscience once and for all. Would that be a good thing? Not necessarily. Our species is caught in a paradoxical dilemma.

All human societies above the hunter gatherer stage have ideologies, either religious or secular. All these ideologies contain irrational elements—tenets that must be accepted on faith, such as the Christian's belief in the divinity of Jesus the Nazarene, or the Buddhist's concept of reincarnation, or the Marxist's faith in the malleability and perfectability of man. Any of these beliefs might be true, but none can be scientifically demonstrated.

When a characteristic like human credulity becomes so widespread in a species, we must suspect that it plays a part in enabling the species to survive, even though we may not know what that function is. For example, people long thought that the bull mammoth's spirally curved tusks, crossing at the tips, were a useless excrescence, good for neither digging nor fighting. Then it was realized that they were useful as snow shovels to get at food in winter.

The same with ideologies. Men on the most primitive level seem actuated by two main drives, less compelling and more inhibitable than true instincts but still effective. One is the drive of self-interest, without which no species could survive.

The other is the altruistic drive—the drive to help and defend others of one's species. Some social drive or instinct is necessary for pack-

L. Sprague de Camp is a prolific author of science fiction, fantasy, and science fact and has written frequently about fringe-science. He is a CSICOP Fellow.

hunting species like lions and wolves; it is lesser or wanting in solitary hunters like tigers and foxes. Having spent millions of years as a pack hunter, man has a natural drive to form hierarchical, cooperative groups. However necessary the drive of self-interest, a certain minimum of altruism is needed to make any group, from a family to a nation, function successfully.

Natural or innate altruism, however, seems confined to one's kith and kin—that is, to the number of persons, usually several score, that make up a hunting band. Among primitives, where a tribe typically calls itself "the real human beings," altruism usually stops at the band or tribal boundary. Those beyond, being thought subhuman, are considered fair game.

"Since some credulity is needed for a people to embrace an ideology, such credulity, up to a point, may be a survival trait."

With the Agricultural Revolution of about 10,000 years ago and the subsequent rise of civilization, it became necessary to organize people in groups much larger than the hunting band. To persuade people to act altruistically toward persons beyond their own families and friends, ideologies were devised. After many centuries of ineffectual experiments by priesthoods, well-thought-out ideologies began to be devised about the eighth century B.C.E. by Isaiah and Zarathustra, followed within the next couple of centuries by Gautama, Mahavira, Confucius, and Lao-dze. All preached benevolence and altruism toward fellow human beings. Since it is a matter of universal observation that virtue is not always rewarded and that the wicked often flourish like a green bay tree, the prophets combined these commandments with promises of rewards for altruistic behavior in Heaven, or in the next incarnation, or in benefits to one's descendants, as well as with threats of punishment for acts they held wicked. Prophets have been at it ever since.

Most prophets have built their ideologies upon tribal myths and legends, which the priesthoods of early cities compiled and tried to rationalize and render self-consistent. That they were not altogether successful is shown by the first verse of Genesis, literally "In the beginning, the gods created. . . ."

A few prophets have composed secular ideologies, ignoring or denying the gods. The most successful have been Confucianism, Stoicism, and Marxism. Of these, the most effective in the long run has been Confucianism; but none has been conspicuously more successful in getting men to act altruistically toward all mankind than religious ideologies.

A completely rational ideology would leave its adherents free ruthlessly

to pursue their own selfish desires without scruple or limit. Many do so now; we call them criminals. If everybody did, we should have a *bellum omnia contra omnes* and life, in Hobbes's phrase, would be "solitary, poore, nasty, brutish, and shorte."

A realistic appraisal of the role of the irrational in ideology was made by the geographer Strabon, a contemporary of Augustus: "The great mass of women and common people cannot be induced by mere force of reason to devote themselves to piety, virtue, and honesty. Superstition must therefore be employed, and even this is insufficient without the aid of the marvelous and the terrible."

We must excuse Strabon's male chauvinism, since as a Classical Greek he could not help it. Niccolò Machiavelli voiced a similar sentiment, albeit more cautiously, since he lived in the days of the Inquisition. In *Discourses on the First Ten Books of Livy,* he said that rulers should foster the current religion and uphold its principles for the sake of the unity and good order of the state, even though they themselves did not believe it.

Since some credulity is needed for a people to embrace an ideology, such credulity, up to a point, may be a survival trait. Ideology is one of the lubricants, like liquor and hypocrisy, that enable men to live together in numbers vastly greater than those the species was evolved to cope with.

In view of mankind's demonstrated credulity and capacity for wishful thinking, the possibility that all men will adopt a coldly and selfishly rational viewpoint seems the least of our present worries. The greater danger is that an ideology will get out of hand and lead to self-destructive mass behavior, as when the Uwet of West Africa nearly exterminated themselves by poison ordeals, the Balengi of the same region killed off most of their tribe by executions for witchcraft, the Christians burned Serveto and Bruno among thousands of others, and the twentieth-century Germans set out to conquer the world on the basis of faith in Aryan superiority.

So we must continue to combat the more destructive irrationalities. The scientific debunker's job may be compared to that of the trash collector. The fact that the garbage truck goes by today does not mean that there will not be another load tomorrow. But if the garbage were not collected at all, the results would be much worse, as some cities found when the sanitation workers went on strike. •

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Night Walkers and Mystery Mongers: Sense and Nonsense At the Edge of Science

Carl Sagan

IN GREECE of the second century A.D., during the reign of the Roman Emperor Marcus Aurelius, there lived a master con man named Alexander of Abonutichus. Handsome, clever, and totally unscrupulous, in the words of one of his contemporaries, he "went about living on occult pretensions." In his most famous imposture, "he rushed into the marketplace, naked except for a gold-spangled loincloth; with nothing but this and his scimitar, and shaking his long, loose hair, like fanatics who collect money in the name of Cybele, he climbed onto a lofty altar and delivered a harangue" predicting the advent of a new and oracular god. Alexander then raced to the construction site of a temple, the crowd streaming after him, and discovered—where he had previously buried it—a goose egg in which he had sealed up a baby snake. Opening the egg, he announced the snakelet as the prophesied god. Alexander retired to his house for a few days, and then admitted the breathless crowds, who observed his body now entwined with a large serpent: the snake had grown impressively in the interim.

The serpent was, in fact, of a large and conveniently docile variety, procured for this purpose earlier in Macedonia, and outfitted with a linen head of somewhat human countenance. The room was dimly lit. Because of the press of the crowd, no visitor could stay for very long or inspect the serpent very carefully. The opinion of the multitude was that the seer had indeed delivered a god.

Alexander then pronounced the god ready to answer written questions

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delivered in sealed envelopes. When alone, he would lift off or duplicate the seal, read the message, remake the envelope, and attach a response. People flocked from all over the Empire to witness this marvel, an oracular serpent with the head of a man. In those cases where the oracle later proved not just ambiguous but grossly wrong, Alexander had a simple solution: He altered his record of the response he had given. And if the question of a rich man or woman revealed some weakness or guilty secret, Alexander did not scruple at extortion. The result of all this imposture was an income equivalent today to several hundred thousand dollars per year and fame rivaled by few men of his time.

"The popularity of borderline science is a rebuke to the schools, the press, and commercial television for their sparse, unimaginative, and ineffective efforts at science education."

We may smile at Alexander the Oracle-Monger. Of course we all would like to foretell the future and make contact with the gods. But we would not nowadays be taken in by such a fraud. Or would we? M. Lamar Keene spent thirteen years as a spiritualist medium. He was pastor of the New Age Assembly Church in Tampa, a trustee of the Universal Spiritualist Association, and for many years a leading figure in the mainstream of the American spiritualist movement. He is also a self-confessed fraud who believes, from first-hand knowledge, that virtually all spirit readings, séances, and mediumistic messages from the dead are conscious deceptions, contrived to exploit the grief and longing we feel for deceased friends and relatives. Keene, like Alexander, would answer questions given to him in sealed envelopes—in this case not in private, but on the pulpit. He viewed the contents with a concealed bright lamp or by smearing lighter fluid, either of which can render the envelope momentarily transparent. He would find lost objects, present people with astounding revelations about their private lives which "no one could know," commune with the spirits and materialize ectoplasm in the darkness of the séance—all based on the simplest tricks, an unswerving self-confidence, and most of all on the monumental credulity, the utter lack of skepticism he found in his parishioners and clients. Keene believes, as did Harry Houdini, that not only is such fraud rampant among the spiritualists but also that they are highly organized to exchange data on potential clients in order to make the revelations of the séance more astonishing. Like the viewing of Alexander's serpent, the séances all take place in darkened rooms—because the deception would be too easily penetrated in the light. In his peak earning years,

Keene earned about as much, in equivalent purchasing power, as Alexander of Abonutichus.

From Alexander's time to our own—indeed, probably for as long as human beings have inhabited this planet—people have discovered they could make money by pretending to arcane or occult knowledge. A charming and enlightening account of some of these bamboozles can be found in a remarkable book published in 1852 in London, *Extraordinary Popular Delusions and the Madness of Crowds,* by Charles Mackay. Bernard Baruch claimed that the book saved him millions of dollars—presumably by alerting him to which idiot schemes he should not invest his money in. Mackay's treatment ranges from alchemy, prophecy, and faith healing, to haunted houses, the Crusades, and the "influence of politics and religion on the hair and beard." The value of the book, like the account of Alexander the Oracle-Monger, lies in the remoteness of the frauds and delusions described. Many of the impostures do not have a contemporary ring and only weakly engage our passions: It becomes clear how people in other times were deceived. But after reading many such cases, we begin to wonder what the comparable contemporary versions are. People's feelings are as strong as they always were, and skepticism is probably as unfashionable today as in any other age. Accordingly, there ought to be bamboozles galore in contemporary society. And there are.

In the past hundred years—whether for good or for ill—science has emerged in the popular mind as the primary means of penetrating the secrets of the universe, so we should expect many contemporary bamboozles to have a scientific ring. And they do.

Within the last century or so, many claims have been made at the edge or border of science—assertions that excite popular interest and, in many cases, that would be of profound scientific importance if only they were true. These claims are out of the ordinary, a break from the humdrum world, and often imply something hopeful: for example, that we have vast, untapped powers, or that unseen forces are about to save us from ourselves, or that there is a still unacknowledged pattern and harmony to the universe. Well, science does sometimes make such claims—as, for example, the realization that the hereditary information we pass from generation to generation is encoded in a single long molecule called DNA, in the discovery of universal gravitation or continental drift, in the tapping of nuclear energy, in research on the origin of life or on the early history of the universe. So if some additional claim is made—for example, that it is possible to float in the air unaided, by a special effort of will—what is so different about that? Nothing. Except for the matter of proof. Those who claim that levitation occurs have an obligation to demonstrate their contention before skeptics, under controlled conditions. The burden of proof is on them, not on those who might be dubious. Such claims are too important to think about carelessly. Many assertions about levitation have been made in the past hundred years, but motion pictures of well-

illuminated people rising unassisted fifteen feet into the air have never been taken under conditions which exclude fraud. If levitation were possible, its scientific and, more generally, its human implications would be enormous. Those who make uncritical observations or fraudulent claims lead us into error and deflect from us the major human goal of understanding how the world works. It is for this reason that playing fast and loose with the truth is a very serious matter.

"The fact that . . . propositions charm or stir us does not guarantee their truth."

One of the most striking apparent instances of extrasensory perception is the precognitive experience, when a person has a compelling perception of an imminent disaster, the death of a loved one, or a communication from a long-lost friend, and the predicted event then occurs. Many who have had such experiences report that the emotional intensity of the precognition and its subsequent verification provide an overpowering sense of contact with another realm of reality. I have had such an experience myself. Many years ago I awoke in the dead of night in a cold sweat, with the certain knowledge that a close relative had suddenly died. I was so gripped with the haunting intensity of the experience that I was afraid to place a long-distance phone call, for fear that the relative would trip over the telephone cord (or something) and make the experience a self-fulfilling prophecy. In fact, the relative is alive and well, and whatever psychological roots the experience may have, it was not a reflection of an imminent event in the real world.

However, suppose the relative had in fact died that night. You would have had a difficult time convincing me that it was merely coincidence. But it is easy to calculate that, if each American has such a premonitory experience a few times in his lifetime, the actuarial statistics alone will produce a few *apparent* precognitive events somewhere in America each year. We can calculate that this must occur fairly frequently, but to the rare person who dreams of disaster, followed rapidly by its realization, it is uncanny and awesome. Such a coincidence must happen to *someone* every few months. But those who experience a correct precognition understandably resist its explanation by coincidence.

After my experience I did not write a letter to an institute of parapsychology relating a compelling predictive dream which was not borne out by reality. That is not a memorable letter. But had the death I dreamt actually occurred, such a letter would have been marked down as evidence of precognition. The hits are recorded, the misses are not. Thus human nature unconsciously conspires to produce a biased reporting of the fre-

quency of such events.

Precognitive dreams are typical of claims made on the boundary or edge of science. An amazing assertion is made, something out of the ordinary, marvelous, or awesome—or at least not tedious. It survives superficial scrutiny by lay people and, sometimes, more detailed study and more impressive endorsement by celebrities and scientists. Those who accept the validity of the assertion resist all attempts at conventional explanation. The most common correct explanations are of two sorts. One is conscious fraud, usually by those with a financial interest in the outcome. Those who accept the phenomena have been bamboozled. The other explanation often applies when the phenomena are uncommonly subtle and complex, when nature is more intricate than we have guessed, when deeper study is required for understanding. Many precognitive dreams fit this second explanation. Here, very often, we bamboozle ourselves.

I make a distinction between those who perpetrate and promote borderline belief systems and those who accept them. The latter are often taken by the novelty of the systems and the feeling of insight and grandeur they provide. These are in fact scientific attitudes and scientific goals. It is easy to imagine extraterrestrial visitors who looked like human beings, flew space vehicles and even airplanes like our own, and taught our ancestors civilization. This does not strain our imaginative powers overly and is sufficiently similar to familiar Western religious stories to seem comfortable. The search for Martian microbes of exotic biochemistry, or for interstellar radio messages from intelligent beings biologically very dissimilar, is more difficult to grasp and not as comforting. The former view is widely purveyed and available; the latter much less so. Yet I think many of those excited by the idea of ancient astronauts are motivated by sincere scientific (and occasionally religious) feelings. There is a vast untapped popular interest in the deepest scientific questions. For many people, the shoddily thought out doctrines of borderline science are the closest approximation to comprehensible science readily available. The popularity of borderline science is a rebuke to the schools, the press, and commercial television for their sparse, unimaginative, and ineffective efforts at science education; and to us scientists for doing so little to popularize our subject.

Flying saucers, or UFOs, are well known to almost everyone. But seeing a strange light in the sky does not mean that we are being visited by beings from the planet Venus or a distant galaxy named Spectra. It might, for example, be an automobile headlight reflected off a high-altitude cloud, or a flight of luminescent insects, or an unconventional aircraft, or a conventional aircraft with unconventional lighting patterns, such as a high-intensity searchlight used for meteorological observations. There are also a number of cases—closer encounters with some highish index numeral—where one or two people claim to have been taken aboard an alien spaceship, prodded and probed with unconventional medical instru-

ments, and released. But in these cases we have only the unsubstantiated testimony, no matter how heartfelt and seemingly sincere, of one or two people. To the best of my knowledge there are no instances out of the hundreds of thousands of UFO reports filed since 1947—not a single one—in which many people independently and reliably report a close encounter with what is clearly an alien spacecraft.

Not only is there an absence of good anecdotal evidence; there is no physical evidence either. Our laboratories are very sophisticated. A product of alien manufacture might readily be identified as such. Yet no one has ever turned up even a small fragment of an alien spacecraft that has passed any such physical test—much less the logbook of the starship captain. It is for these reasons that in 1977 NASA declined an invitation from the Executive Office of the President to undertake a serious investigation of UFO reports. When hoaxes and mere anecdotes are excluded, there seems to be nothing left to study.

Once I spied a bright, "hovering" UFO, and pointing it out to some friends in a restaurant soon found myself in the midst of a throng of patrons, waitresses, cooks, and proprietors milling about on the sidewalk, pointing up into the sky with fingers and forks and making gasps of astonishment. People were somewhere between delighted and awestruck. But when I returned with a pair of binoculars which clearly showed the UFO to be an unconventional aircraft (a NASA weather airplane, as it later turned out), there was uniform disappointment. Some felt embarrassed at the public exposure of their credulity. Others were simply disappointed at the evaporation of a good story, something out of the ordinary—a visitor from another world.

In many such cases we are not unbiased observers. We have an emotional stake in the outcome—perhaps merely because the borderline belief-system, if true, makes the world a more interesting place; but perhaps because there is something there that strikes more deeply into the human psyche. If astral projection actually occurs, then it is possible for some thinking and perceiving part of me to leave my body and effortlessly travel to other places—an exhilarating prospect. If spiritualism is real, then my soul will survive the death of my body—possibly a comforting thought. If there is extrasensory perception, then many of us possess latent talents that need only be tapped to make us more powerful than we are. If astrology is right, then our personalities and destinies are intimately tied to the rest of the cosmos. If elves and goblins and fairies truly exist (there is a lovely Victorian picture book showing photographs of six-inch-high undraped ladies with gossamer wings conversing with Victorian gentlemen), then the world is a more intriguing place than most adults have been led to believe. If we are now being or in historical times have been visited by representatives from advanced and benign extraterrestrial civilizations, perhaps the human predicament is not so dire as it seems; perhaps the extraterrestrials will save us from ourselves. But the fact that these propositions

charm or stir us does not guarantee their truth. Their truth depends only on whether the evidence is compelling; and my own, and sometimes reluctant, judgment is that compelling evidence for these and many similar propositions simply does not (at least as yet) exist.

What is more, many of these doctrines, if false, are pernicious. In simplistic popular astrology we judge people by one of twelve character types depending on their month of birth. But if the typing is false, we do an injustice to the people we are typing. We place them in previously collected pigeonholes and do not judge them for themselves, a typing familiar in sexism and racism.

"Some scientists seem unwilling to engage in public confrontation on borderline-science issues. . . . But it is an excellent opportunity to show how science works at its murkier borders, and also a way to convey something of its power as well as its pleasures."

Those skeptical of many borderline belief-systems are not necessarily those afraid of novelty. For example, many of my colleagues and I are deeply interested in the possibility of life, intelligent or otherwise, on other planets. But we must be careful not to foist our wishes and fears upon the cosmos. Instead, in the usual scientific tradition, our objective is to find out what the answers really are, independent of our emotional predispositions. If we are alone, that is a truth worth knowing also. No one would be more delighted than I if intelligent extraterrestrials were visiting our planet. It would make my job enormously easier. Indeed, I have spent more time than I care to think about on the UFO and ancient astronaut questions. And public interest in these matters is, I believe, at least in part, a good thing. But our openness to the dazzling possibilities presented by modern science must be tempered by some hard-nosed skepticism. Many interesting possibilities simply turn out to be wrong. An openness to new possibilities and a willingness to ask hard questions are both required to advance our knowledge.

Professional scientists generally have to make a choice in their research goals. There are some objectives that would be very important if achieved but promise so small a likelihood of success that no one is willing to pursue them. (For many years this was the case in the search for extraterrestrial intelligence. The situation has changed mainly because advances in radio technology now permit us to construct enormous radio telescopes with sensitive receivers to pick up any messages that might be sent our

way. Never before in human history was this possible.) There are other scientific objectives that are perfectly tractable but of entirely trivial significance. Most scientists choose a middle course. As a result, very few scientists actually plunge into the murky waters of testing or challenging borderline or pseudoscientific beliefs. The chance of finding out something really interesting—except about human nature—seems small, and the amount of time required seems large. I believe that scientists should spend more time in discussing these issues, but the fact that a given contention lacks vigorous scientific opposition in no way implies that scientists think it is reasonable.

There are many cases where the belief system is so absurd that scientists dismiss it instantly but never commit their arguments to print. I believe this is a mistake. Science, especially today, depends upon public support. Because most people have, unfortunately, a very inadequate knowledge of science and technology, intelligent decision-making on scientific issues is difficult. Some pseudoscience is a profitable enterprise, and there are proponents who not only are strongly identified with the issue in question but also make large amounts of money from it. They are willing to commit major resources to defending their contentions. Some scientists seem unwilling to engage in public confrontations on borderline-science issues because of the effort required and the possibility that they will be perceived to lose a public debate. But it is an excellent opportunity to show how science works at its murkier borders, and also a way to convey something of its power as well as its pleasures.

There is stodgy immobility on both sides of the borders of the scientific enterprise. Scientific aloofness and opposition to novelty are as much a problem as public gullibility. A distinguished scientist once threatened to sic then Vice-President Spiro T. Agnew on me if I persisted in organizing a meeting of the American Association for the Advancement of Science in which both proponents and opponents of the extraterrestrial-spacecraft hypothesis of UFO origins would be permitted to speak. Scientists offended by the conclusions of Immanuel Velikovsky's *Worlds in Collision* and irritated by Velikovsky's total ignorance of many well-established scientific facts successfully and shamefully pressured Velikovsky's publisher to abandon the book—which was then put out by another firm, much to its profit—and when I arranged for a second AAAS symposium to discuss Velikovsky's ideas, I was criticized by a different leading scientist who argued that any public attention, no matter how negative, could only aid Velikovsky's cause.

But these symposia were held, the audiences seemed to find them interesting, the proceedings were published, and now youngsters in Duluth or Fresno can find some books presenting the other side of the issue in their libraries. If science is presented poorly in schools and the media, perhaps some interest can be aroused by well-prepared, comprehensible public discussions at the edge of science. Astrology can be used for discus-

sions of astronomy; alchemy for chemistry; Velikovskian catastrophism and lost continents such as Atlantis for geology; and spiritualism and Scientology for a wide range of issues in psychology and psychiatry.

Scientists are, of course, human. When their passions are excited they may abandon temporarily the ideals of their discipline. But these ideals, the scientific method, have proved enormously effective. Finding out the way the world really works requires a mix of hunches, intuition, and brilliant creativity; it also requires skeptical scrutiny of every step. It is the tension between creativity and skepticism that has produced the stunning and unexpected findings of science. In my opinion the claims of borderline science pall in comparison with hundreds of recent activities and discoveries in real science, including the existence of two semi-independent brains within each human skull; the reality of black holes; continental drift and collisions; chimpanzee language, massive climatic changes on Mars and Venus; the antiquity of the human species; the search for extraterrestrial life; the elegant self-copying molecular architecture that controls our heredity and evolution; and observational evidence on the origin, nature, and fate of the universe as a whole.

But the success of science, both its intellectual excitement and its practical application, depends upon the self-correcting character of science. There must be a way of testing any valid idea. It must be possible to reproduce any valid experiment. The character or beliefs of the scientists are irrelevant; all that matters is whether the evidence supports his contention. Arguments from authority simply do not count; too many authorities have been mistaken too often. I would like to see these very effective scientific modes of thought communicated by the schools and the media; and it would certainly be an astonishment and delight to see them introduced into politics. Scientists have been known to change their minds completely and publicly when presented with new evidence or new arguments. I cannot recall the last time a politician displayed a similar openness and willingness to change.

Many of the belief systems at the edge or fringe of science are not subject to crisp experimentation. They are anecdotal, depending entirely on the validity of eyewitnesses, who in general are notoriously unreliable. On the basis of past performance most such fringe systems will turn out to be invalid. But we cannot reject out of hand, any more than we can accept at face value, all such contentions. For example, the idea that large rocks can drop from the skies was considered absurd by eighteenth-century scientists; Thomas Jefferson remarked about one such account that he would rather believe that two Yankee scientists lied than that stones fell from the heavens. Nevertheless, stones do fall from the heavens. They are called meteorites, and our preconceptions have no bearing on the truth of the matter. But the truth was established only by a careful analysis of dozens of independent witnesses to a common meteorite fall, supported by a great body of physical evidence, including meteorites recovered from the

eaves of houses and the furrows of plowed fields.

Prejudice means literally pre-judgment, the rejection of a contention out of hand, before examining the evidence. If we wish to find out the truth of the matter we must approach the question with as open a mind as we can, and with a deep awareness of our own limitations and predispositions. On the other hand, if after carefully and openly examining the evidence, we reject the proposition, that is not prejudice. It might be called "post-judice." It is certainly a prerequisite for knowledge.

"Finding out the way the world really works requires a mix of hunches, intuition, and brilliant creativity; it also requires skeptical scrutiny of every step."

Critical and skeptical examination is the method used in everyday practical matters as well as in science. When buying a new or used car, we think it prudent to insist on written warranties, test drives, and checks of particular parts. We are very careful about car dealers who are evasive on these points. Yet the practitioners of many borderline beliefs are offended when subjected to similarly close scrutiny. Many who claim to have extrasensory perception also claim that their abilities decline when they are carefully watched. The magician Uri Geller is happy to warp keys and cutlery in the vicinity of scientists—who, in their confrontations with nature, are used to an adversary who fights fair—but is greatly affronted at the idea of performances before an audience of skeptical magicians—who, understanding human limitations, are themselves able to perform similar effects by sleight of hand. Where skeptical observation and discussion are suppressed, the truth is hidden. The proponents of such borderline beliefs, when criticized, often point to geniuses of the past who were ridiculed. But the fact that some geniuses were laughed at does not imply that all who are laughed at are geniuses. They laughed at Columbus, they laughed at Fulton, they laughed at the Wright brothers. But they also laughed at Bozo the Clown.

The best antidote for pseudoscience, I firmly believe, is science:

- There is an African fresh-water fish that is blind. It generates a standing electric field, through perturbations in which it distinguishes between predators and prey and communicates in a fairly elaborate electrical language with potential mates and other fish of the same species. This involves an entire organ system and sensory capability completely unknown to pretechnological human beings.
- There is a kind of arithmetic, perfectly reasonable and self-contained,

in which two times one does not equal one times two.

• Pigeons—one of the least prepossessing animals on Earth—are now found to have a remarkable sensitivity to magnetic-field strengths as small as one hundred thousandth that of the Earth's magnetic dipole. Pigeons evidently use this sensory capability for navigation and sense their surroundings by their magnetic signatures: metal gutters, electrical power lines, fire escapes and the like—a sensory modality glimpsed by no human being who ever lived.

• Quasars seem to be explosions of almost unimaginable violence in the hearts of galaxies which destroy millions of worlds, many of them perhaps inhabited.

• In an East African volcanic-ash flow 3.5 million years old there are footprints—of a being about four feet high with a purposeful stride that may be the common ancestor of apes and men. Nearby are the prints of a knuckle-walking primate corresponding to no animal yet discovered.

• Each of our cells contains dozens of tiny factories called mitochondria which combine our food with molecular oxygen in order to extract energy in convenient form. Recent evidence suggests that billions of years ago the mitochondria were free organisms which have slowly evolved into a mutually dependent relation with the cell. When many-celled organisms arose, the arrangement was retained. In a very real sense, then, we are not a single organism, but an array of about ten trillion beings and not all of the same kind.

• Mars has a volcano almost 80,000 feet high which was constructed about a billion years ago. An even larger volcano may exist on Venus.

• Radio telescopes have detected the cosmic black-body background radiation, the distant echo of the event called the Big Bang. The fires of creation are being observed today.

I could continue such a list almost indefinitely. I believe that even a smattering of such findings in modern science and mathematics is far more compelling and exciting than most of the doctrines of pseudoscience, whose practitioners were condemned as early as the fifth century B.C. by the Ionian philosopher Heraclitus as "night-walkers, magicians, priests of Bacchus, priestesses of the wine-vat, mystery-mongers." But science is more intricate and subtle, reveals a much richer universe, and powerfully evokes our sense of wonder. And it has the additional and important virtue—to whatever extent the word has any meaning—of being true. •

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CSICOP After Ten Years: Reflections on the 'Transcendental Temptation'

Paul Kurtz

LITTLE DID we expect when the Committee for the Scientific Investigation of Claims of the Paranormal was first established a decade ago that it would grow and flourish as it has. We are especially gratified by the positive reception from the scientific community and by the enthusiastic support of the distinguished Fellows and Scientific Consultants who have enlisted in our cause.

Unfortunately, uncritically held beliefs in paranormal phenomena seem to be endemic to the contemporary social landscape; and thus CSICOP has by now become an essential organization attempting to ferret out facts from fictions. Given the high level of literacy and education, the high incidence of belief in pseudoscience and the paranormal is a surprising phenomenon, especially since it seems to affect all strata of society. It is of interest to note that uncritical belief in the supernatural and the paranormal in one guise or another has been pervasive in human culture. The recent growth of paranormal belief is perhaps simply a repetition of age-old beliefs and attitudes in new forms.

How do we account for the strength of paranormal belief-systems in this modern age? Several causal explanations have been offered. The one most often heard is that paranormal claims have been sensationalized by irresponsible media. Psychic miracles, UFO encounters, and other strange anomalies are dramatized in color and sound; they are made to appear so real to the viewer that any standards for judging truth from fiction are weakened and often ineffective.

Those of us affiliated with CSICOP have said many times that we

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cannot reject a priori any responsible claims of paranormal phenomena and that many of them deserve patient examination to find out if something genuinely extraordinary might actually be taking place. In one sense, if a scientific explanation of a paranormal claim is found, it immediately becomes a nonparanormal event and part of the natural universe, even though J. B. Rhine and others have insisted that only a "nonphysical" universe could account for such phenomena. It *may be* that psychokinesis, precognition, and remote viewing will someday be verified by patient observation and experimental work in the laboratory. Until they have, we continue to be skeptical. Skepticism is the lifeblood of the scientific enterprise, but it must not be taken as a new orthodoxy and it must give a fair hearing to unorthodox claims.

II

In dealing with the vagaries of paranormal belief for the past decade, I have found that one salient fact emerges—the persistence of what I call the "transcendental temptation," the tendency for human beings to resort to magical thinking and to ascribe occult, mysterious, hidden, or unknown causes to events they cannot fathom. This is surely not a recent development in human history; it has been present throughout the long evolution of the species. Primitive men and women were overwhelmed, no doubt, by the contingent character of human existence: Often confronted by brutal tragedies they could not comprehend—disease, floods, volcanic eruptions, death—they attributed these to the wrath of unknown deities and demons, and attempted to propitiate these unseen postulated forces and powers by sacrifice and prayer. This is the seedbed of mythic religious systems, but it also has its parallels today in the attribution of paranormal causes to otherwise inexplicable events.

Whether the transcendental temptation is genetic in origin—some have even suggested a sociobiological explanation—or a product of human culture is an important question that I will not attempt to resolve here. The point is that there are striking similarities between the religious mythologies that abound in contemporary society and paranormal belief-systems. Some interesting data that may shed some light on this question are pertinent, however.

III

Ever since the founding of CSICOP ten years ago, I have offered a course at the State University of New York at Buffalo called "Philosophy, Parapsychology, and the Paranormal." Most of the students who register for the course (from 35 to 50 each semester) begin as believers in the paranormal. In some years, more than 80 percent of those who respond to a questionnaire I distribute on the first day say they believe in ESP, precog-

nition, and the existence of ghosts, psychokinesis, levitation, or other such phenomena. By the end of the course, however, there is a massive reversal of belief: 80 to 90 percent have become skeptics.

I begin the course by asking the students if they have had strange psychic or paranormal experiences or if they know of someone who has, and they relate this anecdotal information to the class. In the first half of the course, I present the case for a paranormal universe, and I attempt to be fair-minded and neutral. As we proceed, I begin to introduce alternative skeptical explanations.

"More elaborate skeptical scrutiny does have an important therapeutic effect; it diminishes the tendency to believe without evidence."

The high point of the course, I believe, is the term project. I ask students to undertake a research experiment, usually in teams of two to four students. They are to report on the progress of their research project in subsequent weeks. I caution them to tighten up the protocol, to have a sufficient number of runs or trials, and to guard against any sensory leakage or fraud. The students have been highly creative in their research projects. They have performed ganzfeld and remote-viewing experiments; they have tested for psychokinesis, using everything from dice to random-number generators; and they have used Zener cards innumerable times to test for clairvoyance, precognition, and telepathy.

Many diverse hypotheses have come in for scrutiny: Do identical twins have some kind of telepathic affinity? What about parents and children, brothers and sisters, husbands and wives? Is there any difference between children, adolescents, and adults in regard to psi phenomena? Some students have analyzed psychic or tarot-card readings by practitioners in the area; others have made studies of astrological predictions; still others have analyzed reports of apparitions or poltergeists, or have examined claims that psychics help detectives, of the lunar effect, or of UFOs.

I was surprised to find that of almost 100 experiments conducted over the past ten years the results have invariably been negative. I should add that we also do Zener card tests in class (for clairvoyance and precognition) and we try to enter into the data bank at least 1,000 trials for each student. Again, the results both for individual students and for the class as a whole have always been negative. Never has there been any significant deviation from chance expectation.

Lest anyone counter that I am a "goat" and hence am wielding a negative influence on the data, let me point out that a large percentage of

the student-experimenters begin as "sheep," believing in the phenomena. They are as astonished as I am that no one has ever had positive results. Just as the British parapsychologist Susan Blackmore became a skeptic after a decade of trying to elicit psi phenomena and getting only negative results, so the students in my classes have become highly skeptical. It appears that a process of deconversion sets in: at the end of the course most of the students are skeptical about any evidence for paranormal claims, though open-minded about the possibility of psi phenomena.

One of the reasons I assigned these projects was that I wanted to see for myself whether any positive results could be obtained. These continuous negative findings puzzled me, for I thought that at least on some occasions they might achieve some above-chance results. What are we to conclude from this? Is it that ESP is so weak that it does not come up very often? Or that ESP does not exist at all?

I have long felt that one of the most important papers the SKEPTICAL INQUIRER ever published was by Barry Singer and V. A. Benassi, "Fooling Some of the People All of the Time" (Winter 1980-81, pp. 17-24), in which they reported the ready tendency among students to engage in magical thinking. Their students were shown psychic demonstrations by a magician posing as a "psychic," and even when they were told that he was a conjurer and not really a psychic, many nonetheless continued to believe in the reality of his psychic feats. This suggests that there could be something very deep in human psychology that makes it difficult to overcome the tendency toward magical thinking—the *transcendental temptation.* Singer and Benassi, however, did this in only one class during each course, and the students were not exposed to any kind of sustained criticism. I have found that if there is intensive exposure (of, say, 15 weeks' duration) to the rational view, if alternative critiques are available, and if the students are allowed to test the claims empirically for themselves, this will do more than anything else to guard against the transcendental temptation. In other words, more elaborate skeptical scrutiny of paranormal claims does have an important therapeutic effect; it diminishes the tendency to believe without evidence.

I shall end on this positive note. It indicates that the fair-minded and open presentation of paranormal subjects, together with skeptical scrutiny, will tend to develop rational defenses—at least for many people. This is all the more reason for CSICOP to continue its effort to bring scientific findings and alternative explanations to the attention of the public. And that has been our task: to foster an appreciation of the aims of science and, by continuing to present results of our inquiries, to raise the level of rationality in society. Critical inquiry has proved to be the best antidote for misperception and misconception for a significant number of educated people. The transcendental temptation can thus be moderated. •

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Crash of the Crashed-Saucer Claim

Proponents ignore the hard evidence against this tale.

Philip J. Klass

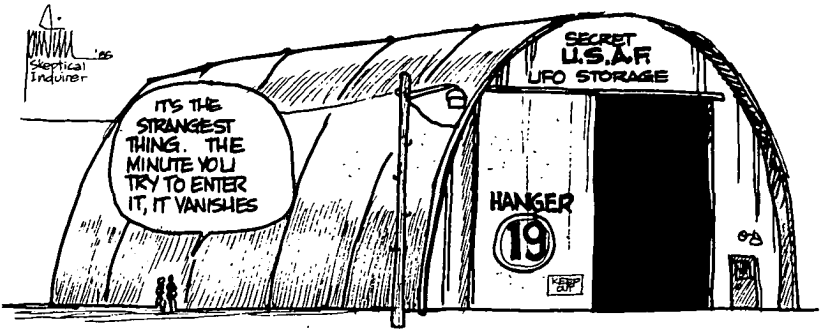
A REVEALING INDICATION of the credulity of many of the present leaders of the UFO movement is their widespread acceptance of the claim that the U.S. government recovered one or more flying saucers in 1947, along with bodies of the alleged occupants—a tale rejected three decades ago by leading UFOlogists. A paper on the alleged crashed saucers was featured at the 1985 conference of the Mutual UFO Network (MUFON), the nation's largest UFO organization, and at earlier MUFON conferences.

The crashed-saucer tale was first advanced in 1950, barely three years after UFOs had been "discovered" in a best-selling book by Frank Scully, then a columnist for *Variety*—the "Bible of Show-Biz." But Scully's wild claim was promptly rejected even by *True* magazine, which itself had helped launch the UFO era a few months earlier when it published an article by Donald Keyhoe claiming that the earth was being visited by extraterrestrial craft.

Scully had obtained his information on the "crashed saucers" from two men who were exposed as con-men two years later by a young reporter, J. P. Cahn, in an article published in *True*. Soon afterward, the two men were arrested and charged with selling a device called a "Doodlebug," which they claimed could find oil deposits. One of their victims had invested more than $230,000. The two men subsequently were convicted of fraud.

For almost three decades the claim of crashed saucers in New Mexico was ignored by responsible UFOlogists. Then, in 1980, it was resurrected by Charles Berlitz and William L. Moore in their book *The Roswell*

Philip J. Klass, a Washington aerospace editor, is the author of UFOs: The Public Deceived *and* UFOs Explained. *He is chairman of CSICOP's UFO Subcommittee.*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Incident. Berlitz earlier achieved fame and fortune with his book on the Bermuda Triangle, which he claimed mysteriously swallowed up airplanes and ships—some of which had never existed. Moore earlier had authored the book *The Philadelphia Experiment,* which claimed that during World War II the U.S. Navy had discovered techniques that could make its ships invisible. But, according to Moore, the Navy decided not to deploy this remarkable technique because its use gave sailors headaches or made them ill.

With this heritage, one might expect the leaders of the UFO movement to treat the Berlitz-Moore claims with considerable skepticism—unless one is familiar with the incredible credulity of many UFOlogists. Even Bruce S. Maccabee, one of the most technically competent of pro-UFOlogists and head of the Fund for UFO Research, gave the Berlitz-Moore book an endorsement in a book review published in *Frontiers of Science* magazine.

It is not surprising that Berlitz and Moore intentionally omitted from their book the considerable hard evidence that denied the claim of crashed saucers. But considering the amount of time UFOlogists spend in pouring over old, once-classified documents in a desperate search for evidence of a massive government coverup, it is curious that they too have failed to note, or publicize, how this utterly demolishes the crashed-saucer hypothesis.

According to Berlitz and Moore, a flying saucer crashed on the ranch of W. W. Brazel *during the first week of July 1947,* and possibly a second crashed near Socorro shortly afterward. The Army Air Force (soon to become the U.S. Air Force) position was that the debris found by Brazel was nothing more than a balloon-borne radar reflector, a device resembling a box-kite lined with aluminum-foil, used to calibrate ground-tracking radars.

Naturally, Berlitz and Moore reject that explanation, drawing on the 30-year-old recollections of local citizens and a number of newspaper clippings dating back to 1947. One important newspaper account Berlitz and Moore omit entirely is an Associated Press dispatch dated July 9,

Carlsbad (N.M.) Daily Current-Argus
July 9, 1947, P. 2

PAGE TWO

'Flying Disc' Turns Out To Be Weather Balloon

ROSWELL, N. M., July 9—(AP)—W. W. Brazel, the New Mexico rancher who was originally thought to have found the nation's first "flying disc" is sorry he said anything about it.

The 48-year-old New Mexican said he was amazed at the fuss made over his discovery.

"If I find anything else short of a bomb it's going to be hard to get me to talk," he told the Associated Press here early this morning.

Brazel's discovery was reported yesterday afternoon by Lt. Warren Hart, Roswell Army Air Field public relations officer, as definitely being one of the "flying discs" that have puzzled and worried citizens of 43 states during the past several weeks.

The statement was later discounted by Brig. Gen. Roger Ramey, commanding general of the Eighth Air Force of which the RAAF is a component. Gen. Ramey said Brazel's discovery was a weather radar target.

But Brazel wasn't making any claims. He said he didn't know what it was.

He described his find as

he said, "it wasn't a kite."

Brazel related this story:

While riding the range on his ranch 30 miles southeast of Corona, N. M., on June 14 he sighted some shiny objects. He picked up a piece of the stuff and took it to the ranch house seven miles away.

On July 4, he returned to the site with his wife and two of his children, Vernon, 8, and Bessie, 14. They gathered all the pieces they could find. The largest about three feet across.

Brazel

Portion of 1947 AP article reporting that New Mexico rancher W. W. Brazel discovered debris on June 14. This was more than two weeks *before* the supposed flying-saucer crash proposed by Berlitz and Moore. Brazel described it as pieces of paper covered with a foil-like substance and pieced together with small sticks. Nearby were small pieces of rubber.

1947, based on an interview with Brazel himself. The article quotes Brazel as saying he discovered the debris while riding his ranch on *June 14—more than two weeks before Berlitz and Moore claim the flying saucer crashed.*

Brazel's description of what he found, quoted in the Associated Press article, confirms the government position that the object was only a balloon-borne radar reflector: "large numbers of pieces of paper covered with a foil-like substance and pieced together with small sticks much like a kite. Scattered with the materials over an area of about 200 yards were pieces of gray rubber. All the pieces were small." The article quoted Brazel as saying, "At first I thought it was a kite, but we couldn't put it together like any kite I ever saw."

According to Berlitz and Moore, the crashed saucer was promptly flown to Wright-Patterson Air Force Base, near Dayton, Ohio, for analysis. This base was the technical nerve-center for the Air Force and included its foreign intelligence operations. At the time, the base commander was Lt. Gen. Nathan Twining, who later became the USAF's chief of staff.

In September 1947, following a rash of UFO reports in the wake of the famous first sighting, reported by pilot Kenneth Arnold in June, the chief of staff of the Army Air Force had requested General Twining to provide him with a situation assessment, which Twining did in his letter of September 23, 1947. Berlitz and Moore quote extensively from this letter, including Twining's statement that "the phenomenon reported is something

real and not visionary or fictitious." But the authors omit a critically important statement in the same letter, where Twining noted that there was a *"lack of physical evidence in the shape of crash-recovered exhibits which would undeniably prove the existence of these objects."* And Twining was the commanding officer of the base where, according to Berlitz and Moore, top scientists had been analyzing the crashed saucer for more than two months.

After omitting this sentence from the Twining letter, the authors wrote: "It is understandable that the Twining memo makes no reference to the Roswell disc . . ." It is understandable if the debris sent to Wright-Patterson AFB had turned out to be only a balloon-borne radar reflector and not a crashed saucer. The alternative explanations are that nobody thought to inform General Twining of the dramatic work under way at the base he commanded, or that Twining was intentionally lying to his own commanding officer.

Although dozens of ordinary citizens in New Mexico, without any official "need to know," quickly learned about the alleged crashed saucer(s), according to Berlitz and Moore word of the incident was withheld from the Army chief of staff because, as they explain, "he did not possess the necessary clearances." His name: Dwight D. Eisenhower. Even after General Eisenhower became president, according to Berlitz and Moore, he was not informed of the recovered crashed saucer(s) until more than a year later because "some of the higher-ups in the intelligence community didn't trust Ike. . . ." (Recall that Allen Dulles, director of Central Intelligence under Eisenhower, was a brother of Secretary of State John Foster Dulles and a close personal friend of Eisenhower.)

In early 1953, top officials at Air Defense Command headquarters in Colorado Springs received a briefing on the USAF's UFO-investigations program by Capt. Edward J. Ruppelt, then head of Project Blue Book. The briefing was classified "Secret," as Ruppelt explained, in case sensitive matters, such as the coverage of the nation's air defense radar network, came up during the question-and-answer period. Subsequently, Ruppelt's prepared briefing was declassified and was published a decade ago in *Project Blue Book*, a book edited by Brad Steiger.

The head of Project Blue Book told top Air Defense Command officials: "It can be stated now that, as far as the current situation is concerned, there are no indications that the reported objects are a direct threat to the U.S., nor is there any proof that the reported objects are any foreign body over the U.S. or, as far as we know, the rest of the world. This always brings up the question of space travel . . . and it is the opinion of most scientists or people that should know that it is not impossible for some other planet to be inhabited and for this planet to send beings down to the earth.

"However there is no—and I want to emphasize and repeat the word *no*—evidence of this in any report the Air Force has received. . . . *We have*

A Hoax UFO Document

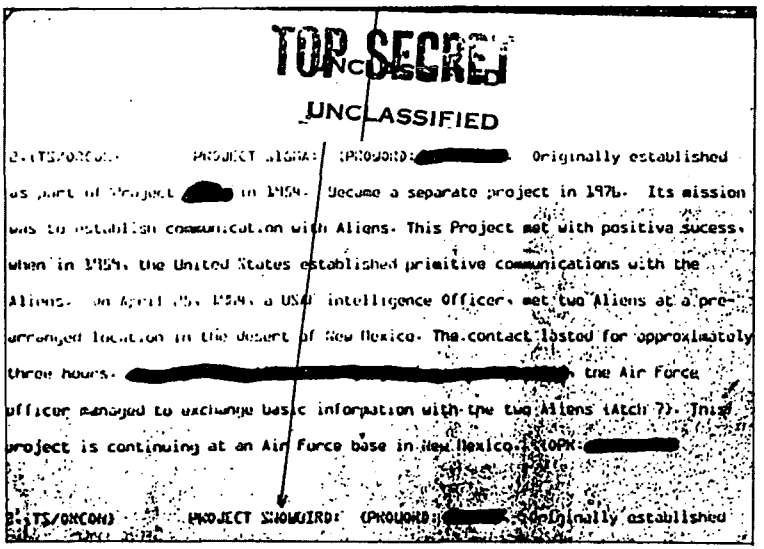
Don't be surprised if you see a tabloid headline that reads "TOP SECRET DOCUMENT REVEALS U.S. CONTACT WITH ETs," and a subhead that reads "Flying Saucer Under Test Since Early 1970s." A reduced-size copy of the document probably will be published, showing its bold "TOP SECRET" stamp at top and bottom.

The document is an obvious hoax, or should be an obvious hoax to any but a credulous UFOlogist and those who read sensationalist tabloids. The document is typewritten on a plain sheet of paper without the letterhead of any agency, such as the Department of Defense or the Central Intelligence Agency. It is undated and unsigned. Alongside each of the "TOP SECRET" stamp-marks is an "Unclassified" stamp-mark. But there is no notation to show when the document was "declassified" or the identity of the person who took the action—*which is mandatory even for "Secret" documents,* let alone those that are "Top Secret." (Such dates and annotations are found on the once-secret CIA documents dealing with UFOs that were released in late 1978.)

Even the contents are such conflicting nonsense that they reveal the document to be someone's practical joke. Following is the content, with XXX used here to indicate blacked-out portions:

> [Unclear letters/code?] PROJECT SIGMA: (PROWORD: XXX. Originally established as part of Project XXX in 1954. Became a separate project in 1976. Its mission was to establish communications with Aliens. This project met with positive success when in 1954, a USAF intelligence Officer met two Aliens at a prearranged location in the desert of New Mexico. The contact lasted for approximately three hours. XXXXXXXXXXXXXXXX the Air Force officer managed to exchange basic information with the two Aliens (Atch. 7). This project is continuing at an Air Force base in New Mexico (OPK: XXXXX
>
> [Unclear letters/Code?] PROJECT SNOWBIRD: (PROWORD XXXX, Originally established in 1972. Its mission was to test fly a recovered Alien aircraft [*sic*]. This project is continuing [unclear word]
>
> [Unclear letters/code?] PROJECT XXXX XXXXXXX Originally established [unclear]. Its mission was to evaluate all UFO XXX information pertaining to space [unclear, several words].

According to the contents, Project Sigma, created as part of another project in 1954, was to "establish communications with



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2.(TS/OADR) PROJECT SIGMA: (PROJORD: [redacted] Originally established as part of Project [redacted] in 1954. Became a separate project in 1976. Its mission was to establish communication with Aliens. This Project met with positive sucess. When in 1954, the United States established primitive communications with the Aliens. On April 20, 1954, a USAF intelligence Officer, met two Aliens at a pre-arranged location in the desert of New Mexico. The contact lasted for approximately three hours. [redacted] the Air Force officer managed to exchange basic information with the two Aliens (Atch 7). This project is continuing at an Air Force base in New Mexico. (COPY: [redacted]

3.(TS/OADR) PROJECT SHOWBIRD: (PROJORD: [redacted] Originally established

Aliens," and in the same year, a USAF officer "met two Aliens . . . contact lasted for approximately three hours." Yet, despite this outstanding success, communications with Aliens was not considered important enough to warrant giving it separate project status until 22 years later, in 1976.

And, according to this document, the U.S. government either managed to borrow, or commandeered, a flying saucer by 1972, and seemingly has been flying it for more than a decade. Yet, curiously, none of this advanced "flying saucer technology" has found its way into latest-generation military aircraft, which still use "old-fashioned" jet engines, wings, empennages, etc.

If the events described in this document had occurred, and if the U.S. government decided to declassify this document and release it to UFOlogists, knowing it would become public knowledge, why did not some American president hold a televised press conference to announce the startling news to the world?

It is interesting to note that the alleged contact with Aliens occurred in New Mexico, which of course is the state in which it is claimed that one or more flying saucers crashed in 1947. It is not really difficult to understand why there seems to be so much extraterrestrial traffic to that state; for, as many terrestrial visitors have discovered, New Mexico is true to its official motto: "Land of Enchantment."

—Philip J. Klass

Kendrick Frazier

Flying saucer over New Mexico? Not this time. Lenticular cloud photographed over northern outskirts of Albuquerque Nov. 30, 1985.

never picked up any 'hardware.' By that we mean any pieces, parts, whole articles, or anything that would indicate an unknown material or object. . . ."

Other hard evidence that denies the crashed-saucer claims can be found in material once classified "Secret" obtained from Central Intelligence Agency files in late 1978 via the Freedom of Information Act. These CIA papers reveal that in mid-1952, probably sparked by highly publicized reports of UFOs on radar screens at Washington's National Airport, the White House asked the CIA to make an independent assessment of the situation. As a result, high-ranking CIA scientists went to Dayton for a USAF briefing on the findings of its Project Blue Book effort. Then, in mid-August, these top CIA scientists briefed the director of Central Intelligence.

In one of these briefing papers, dated August 14 and originally classified "Secret," the briefer discussed the possible explanations for UFO reports, including the possibility that some might be generated by extraterrestrial craft. But the briefer added that "there is no shred of evidence to support this theory at present. . . ." Another once-"Secret" briefing paper, dated August 15, states: "Finally, no debris or material evidence has ever been recovered following an unexplained sighting."

Recently, using the Freedom of Information Act, UFOlogists obtained an Air Intelligence Report, dated December 10, 1948, originally classified

"Top Secret." It was considered such an important "find" that the *MUFON UFO Journal* devoted almost its entire July 1985 issue to reproducing this report, prepared jointly by the USAF's Directorate of Intelligence and the Office of Naval Intelligence. The objective of the report was to provide a best-estimate of the UFO situation as of 1948.

Although this once "Top Secret" report was prepared more than a year after Berlitz and Moore claim that at least one crashed saucer was recovered in New Mexico by defense officials, *there is not a single mention of any such evidence.* Instead, the report focuses its speculation on the possibility that UFO reports might be generated by Soviet reconnaissance overflights, possibly using advanced vehicles built with the help of captured German scientists.

This 1948 report concludes: "IT MUST [*sic*] be accepted that some type of flying objects have been observed, although their identification and origin are not discernible. In the interest of national defense it would be unwise to overlook the possibility that some of these objects may be of foreign origin."

Presumably this report will be studied by MUFON's international director, Walter Andrus, and by many other leading UFOlogists. Will they recognize its obvious implications (and the other hard evidence cited above) in terms of the Berlitz-Moore claim of crashed saucers? Or will Moore continue to spin his tales at future MUFON conferences, prompting his audience to believe that somewhere in some secret government vault lies the debris, and perhaps even the bodies, that could at long last confirm UFOlogists' fondest hopes? •

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A Study of the Kirlian Effect

The Kirlian technique makes interesting photos, but the effects seen have natural explanations.

Arleen J. Watkins and William S. Bickel

AN INTERESTING photographic phenomenon called Kirlian photography can be demonstrated by applying a high-voltage (15,000–60,000 volts) high-frequency discharge across a grounded object placed on a sheet of film laying on the high-voltage plane. A typical configuration and one used for this study is illustrated in Figure 1. When the object placed on the film plane is grounded to complete the current loop, a discharge occurs between the object and the high-voltage conducting plane creating an air-glow discharge, which appears to the eye as a purple-blue fuzzy light called an aura. The aura is a very real physical phenomenon and can be recorded directly on photographic paper, on film (black and white or color), or on photo plates. When the plates are developed, the aura appears as a fuzzy glow around the boundary of the image.

Beginning in the 1970s, the origin of this aura image and its relevance to the state or condition of the object producing it became a topic of great popular interest. Claims were made that the aura of human objects—fingers, toes, etc.—contain information about the physiological, psychological, and psychic state of the individual. For plant and animal parts—leaves, stems, legs, wings, tissue, bone cross-sections, etc.—the aura was claimed to carry information about the "life-force," "life-energy," or "bioplasma" of the object. If the aura were indeed a probe for such conditions and carried information about important parameters inaccessible by, or more accurate than, other techniques, it would be a powerful and important technique for such studies.

Literature on Kirlian photography reports many studies by various

Arleen Watkins and William Bickel are in the Department of Physics, University of Arizona, Tucson.

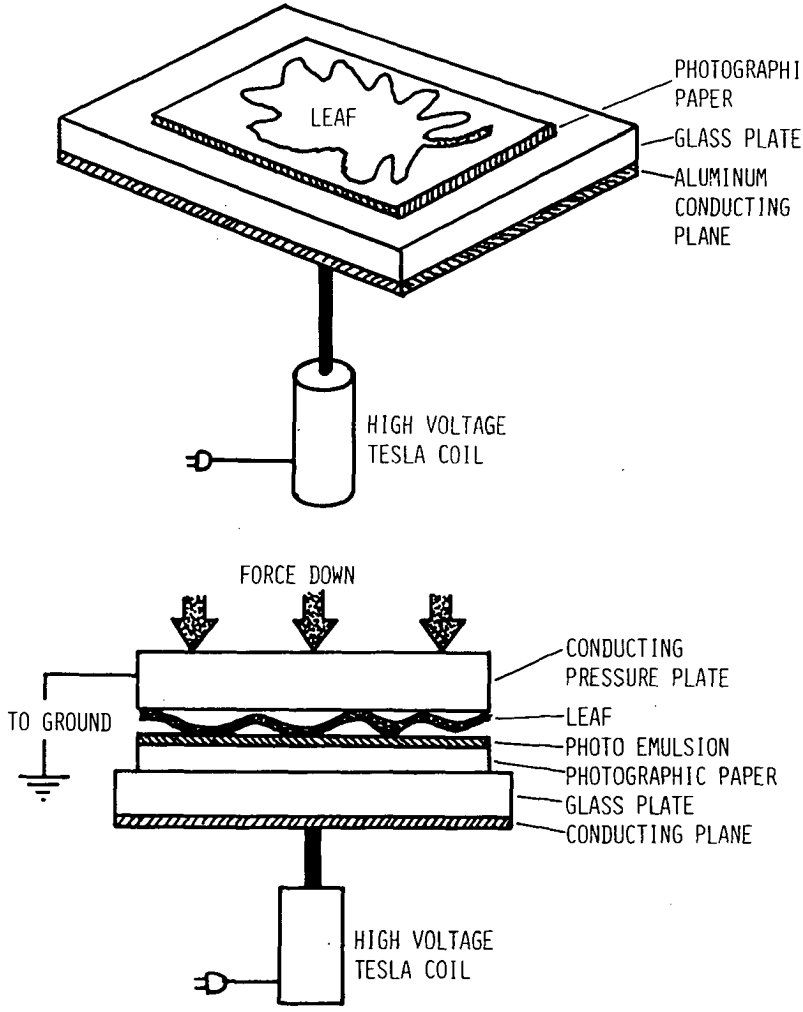

FIGURE 1. Arrangement of the high-voltage coil, glass plate, conducting plane, photographic paper, sample, and press for making Kirlian photographs.

people and groups. One universal and puzzling point is that it is often discussed with an air of mystery. It has been referred to as a new phenomenon, an unknown phenomenon, and a mysterious phenomenon carrying important information about life. For most physicists, the first guess is that the effect (the aura) is a corona discharge in air. If this is the case, the phenomenon, although it may be complicated to explain in detail, is well known and will be governed by the laws of physics. Therefore, any scientist setting out to investigate it will first document all observables relating to this phenomenon. Many serious studies have done exactly this. This was the motivation of this study, which we carried out with an

apparatus we constructed to generate Kirlian photographs.

We took more than 500 Kirlian photographs to study the aura from three sets of objects with various configurations—animal, plant, and mechanical. Figure 2 displays some typical aura images. It is rather easy to recognize the objects used. The boundaries are quite distinct; the aura is rich in detail and shows much variation from object to object. We now discuss specific aura patterns to substantiate or refute certain claims and interpretations made by Kirlian investigators.

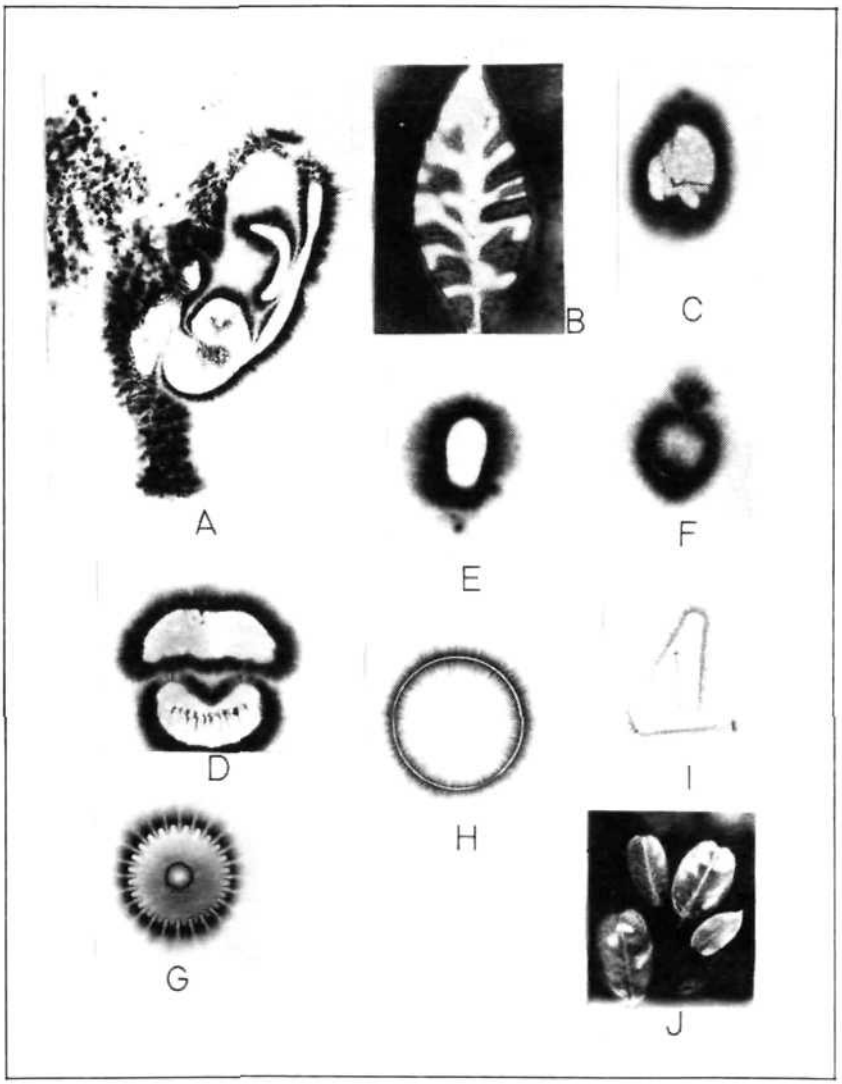

FIGURE 2. Kirlian photographs: (1) ear, (b) leaf, (c) thumb, (d) lips, (e) finger, (f) diamond ring, (g) brass gear, (h) metal ring, (i) paper clip, (j) leaves.

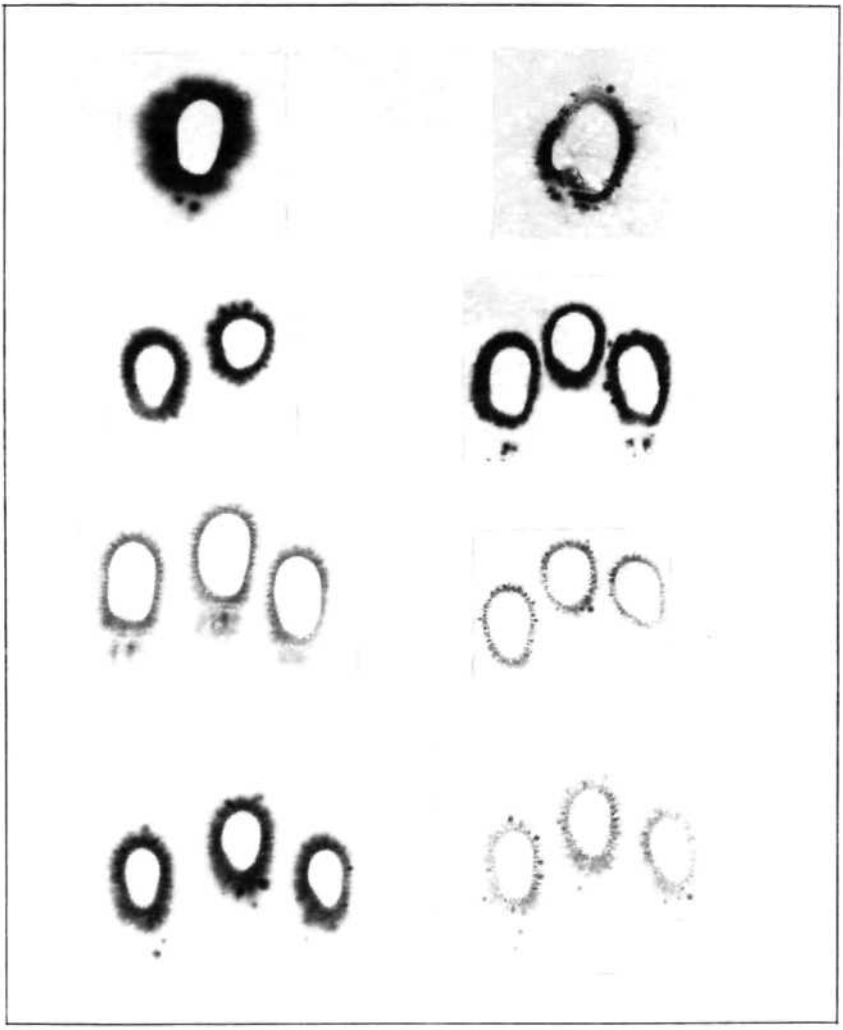

FIGURE 3. Assorted auras of thumb and finger prints of different people using different photographic paper, exposure and development times.

Claim 1

The aura is related to the "life-energy" or "bioplasma" of the animal or plant. The shape, size, intensity, and structure of the aura depend on the psychic energy, state of mind, emotion, well-being, illness, etc., of the object. Figure 3 shows a set of aura pictures of three different individuals. Figure 4 shows the aura of mechanical objects—coins, wire, water, gears, and sharp metal points.

Question: If the aura is due to the "bioplasma" or "photo energy" of the living object, then why does it appear from mechanical objects?

Answer: Since the aura appears from dead and organic objects as well as living or once living objects, the aura does not represent a "bioplasma."

Claim 2

The aura is supposed to represent the condition of the object via its size, shape, intensity, and structure. Figure 5, a, b, c show three sets of finger auras, from three different people. Each set was taken within a period of 15 seconds. Note that the aura varies from finger to finger in each set and very markedly in set 5 c.

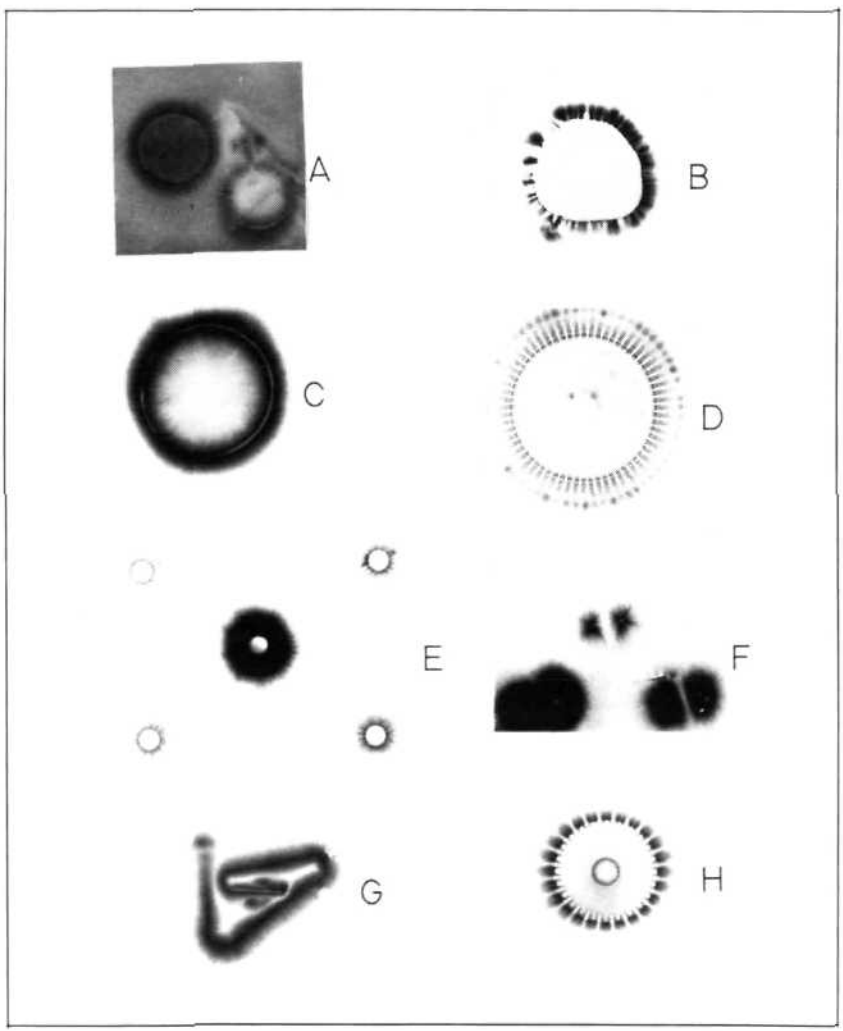

FIGURE 4. Assorted auras of mechanical objects: (1) penny ring, (b) water droplet, (c) ring, (d) brass spur gear, (e) small metal discs, (f) sharp point pairs, (g) paper clip, (h) brass gear.

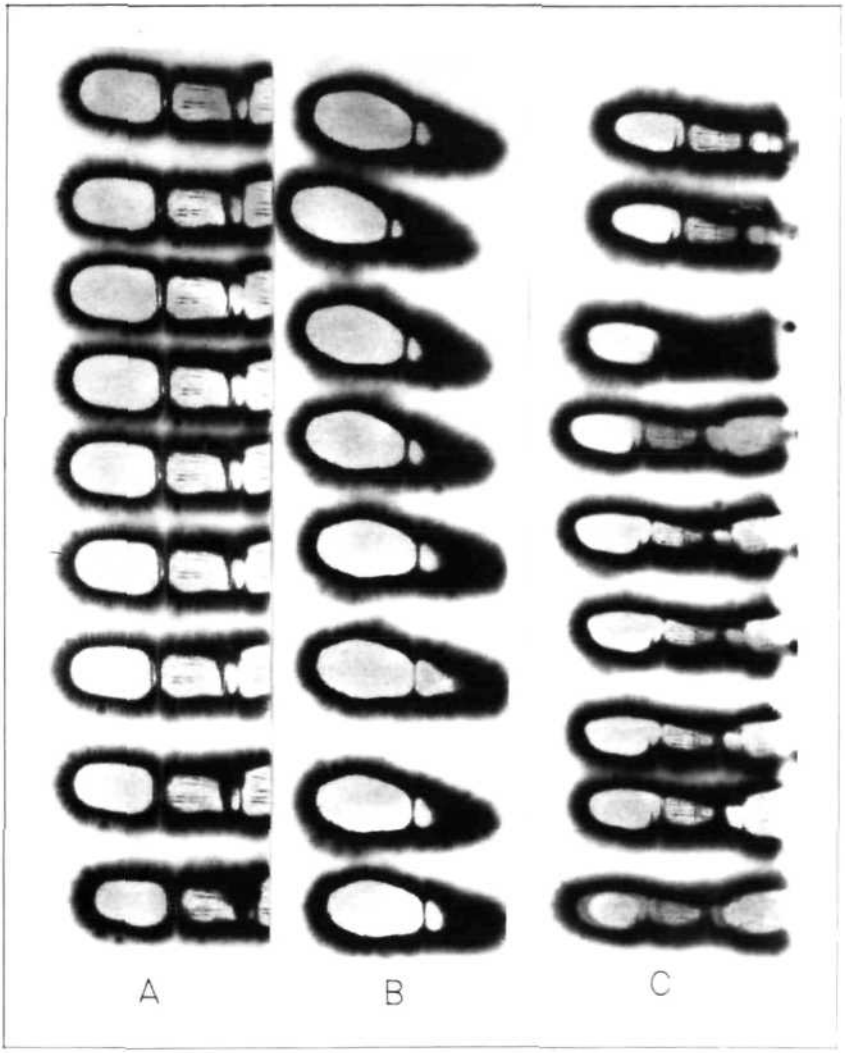

FIGURE 5. Aura of three sets of fingers from three different people.

Question: If the aura represents the condition of the object, what interpretation do we give for the markedly different patterns?

Answer: For this set, none. We do not suspect at this point that the change in aura from one print to the next in any strip represents a change in mental or physical condition or personality of the individual. We suspect instead the cause of the differences is due to lack of experimental control, which will be discussed in detail in the last section.

Claim 3

When two fingers of two *different* people are placed side by side simultaneously, the aura pattern shown in Figure 6 results. Note the combined aura shows a sharp boundary between the two images. This is said to be due to the incompatibility of the two individuals; and the sharpness of the boundary, a measure of the degree of imcompatibility. However, Figure 6b shows an aura created by two fingers of the *same person* simultaneously, 6d and 6f the aura of two pennies, 6e of a dime and a quarter, 6g of a metal bar and a dime, 6c of three fingers of the same hand simultaneously.

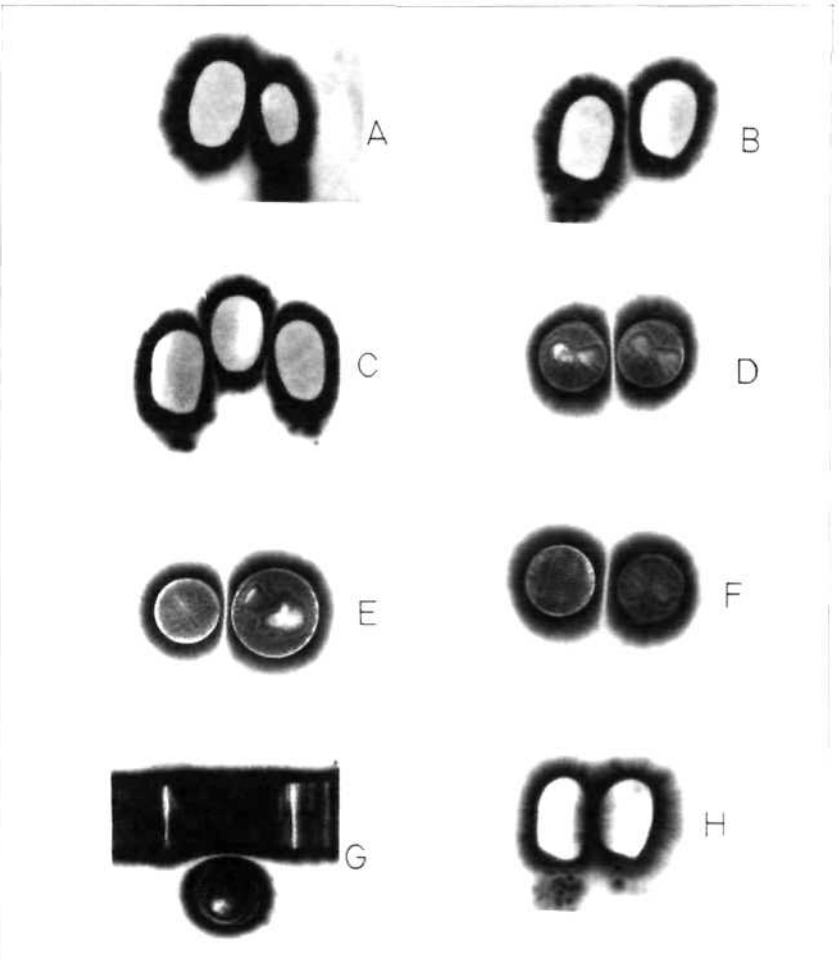

FIGURE 6. Aura pairs showing equipotential boundary between aura patterns. (a) fingers of two different people, (b) and (c) fingers of the same person, (d) and (f) two pennies, (e) penny and quarter, (g) dime and metal bar, (h) aura pattern of two fingers of same person not taken simultaneously.

In *all* cases a sharp boundary occurs between the auras.

Question: If the sharpness of the boundary is an indicator of incompatibility, what interpretation do we give for the sharp boundary between the auras created by two fingers on the *same hand* of the *same person,* as well as between metal objects?

Answer: The interpretation of incompatibility is wrong unless two or three fingers on the *same* hand are incompatible with one another, or a dime is incompatible with a quarter, etc. The sharp boundary and its shape is easily explained in all cases using well-known physics laws. The boundary where no aura occurs is caused by the lack of electron motion in the film plane. Since both objects are at equipotential and both seek to neutralize the surrounding film plane, an area somewhere between the two objects will be at zero potential, i.e., an electron there is attracted with equal force in both directions. Therefore, it doesn't move. There is no electron flow, no current, no excitation of the air molecules, and therefore no aura. These physics principles also exactly explain the curved boundary of Figures 6e and 6g. Figure 6h shows the aura of two "compatible" fingers. However, it was made by placing first one finger, *then* the other, on the photographic paper. Since the images are not made simultaneously, the electrons can flow into the other image area, causing an aura there.

Claim 4

When Kirlian photographs are taken with color film, in addition to the size, intensity, structure, and shape of the aura, we obtain the new parameters of color and color distribution. Color photographs of auras are very dramatic, showing a rich color distribution, which is claimed to contain information about the emotions of the subject—red = anger, strong emotion; blue = coolness and composure; etc. Although no color photography was done in this study, an examination of many color slides from a previous study brings up the same questions as the black and white pictures do *and more.*

Question: Are emotion and personality related to the color distribution of the aura?

Answer: Until proper controls show that the color photograph contains information *in addition to* what can be explained by laws of physics and the photographic process, this question cannot be answered. (Color emulsions contain three color dyes with different sensitivities to photon and electron stimulation.)

Claim 5

The aura of leaves and stems shown in Figure 7 is very rich in detail. As with finger auras, there is a large difference in aura patterns even though they are of the same leaf. There is a rather remarkable claim that one can

FIGURE 7. Aura of various leaves.

get an aura pattern of an entire leaf even though part of the leaf has been torn or cut away or otherwise removed. This is called the "phantom-leaf effect." It is evidently difficult to reproduce but has been reported by several investigators and recorded on movie film. (There is also a "phantom salamander-tail effect.") None of our photographs demonstrated the phantom-leaf effect. Figure 8 shows the aura of torn and cut leaves. In no case was an aura detected in the region of the missing leaf or around its boundary.

Question: Is the "phantom-leaf effect" due to the bioplasmic body of the leaf?

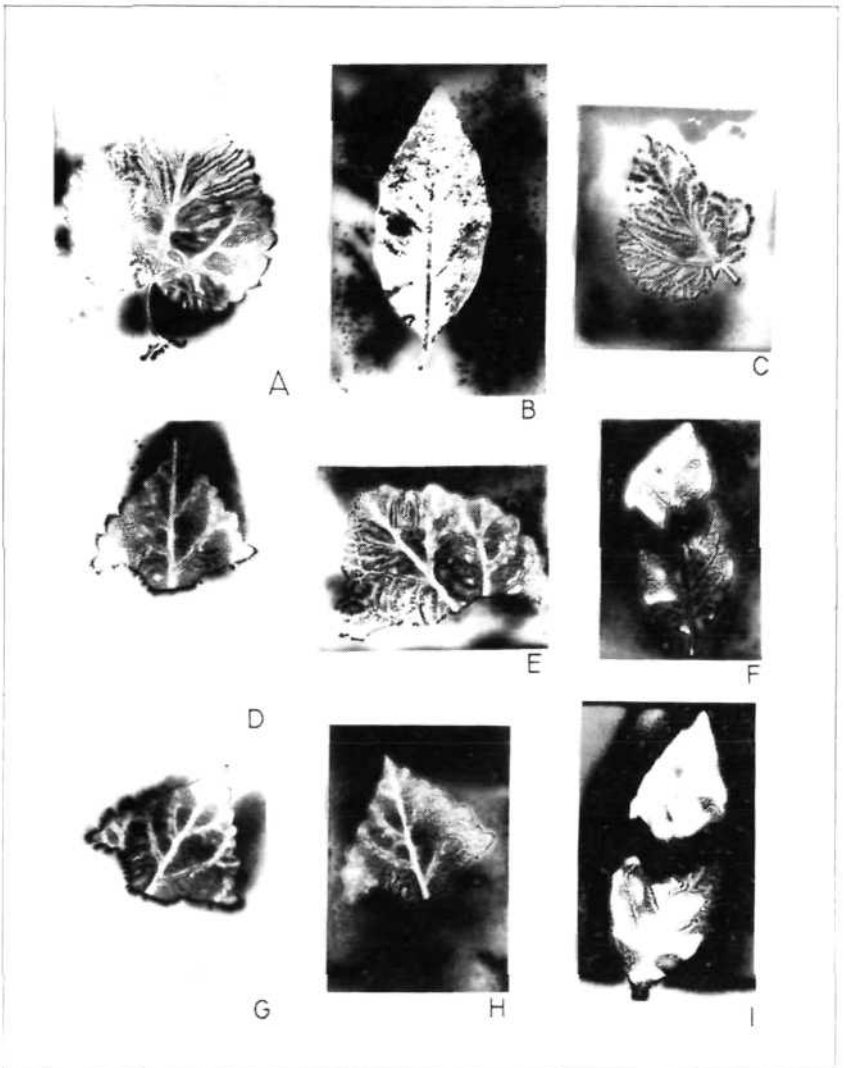

FIGURE 8. Aura of whole and broken leaves: (a), (b), and (c) whole leaves; (d), (e), (g), and (h) broken leaf with one piece missing; (f) and (i) broken leaf with broken sections separated.

Answer: The several caes we investigated where a phantom-leaf effect seemed to occur were *artifacts* and quite easy to explain. When a whole leaf is pressed against the film plane with a metal plate, moisture, dust, and a minute amount of juices are squeezed from the leaf, leaving an image. Sometimes this image could even be seen with the eye. When the whole leaf was removed and the metal plate returned to its original position, the new photograph showed a weak, fuzzy, ill-defined, and "mysterious" shape of the missing leaf. Figure 9b. shows the aura of the entirely missing leaf shown in 9a. This image, however, is totally an artifact.

The Kirlian Technique: Parameters Involved and Controls Needed

Although Kirlian photographs are very easy to make—needing a minimum of talent, equipment, and money, the entire Kirlian process from sample preparation to photo interpretation involves very many parameters and a very complex interplay between parameters and conditions. The following list contains 22 of the many parameters that must be controlled. Some of the more crucial ones will be discussed in detail. The parameters can be grouped into the following areas: (A) electronic and mechanical configuration, (B) sample and environment, (C) film, plates, and photographic process, (D) photographic image interpretations.

A. *Electronic and Mechanical:* (1) Voltage discharge. (2) Current in discharge. (3) Current density through sample. (4) Frequency of the discharge (pulses per second). (5) Pulse shape. (6) Total resistance in circuit consisting of the air, emulsion, and sample. (7) Electric field configuration; point-plane, high-voltage plane, shape (square, rectangular, circular), grounding plane shape. (8) Sample holder and pressures used, size, shape and electrical characteristics of the press used to flatten sample against film plane.

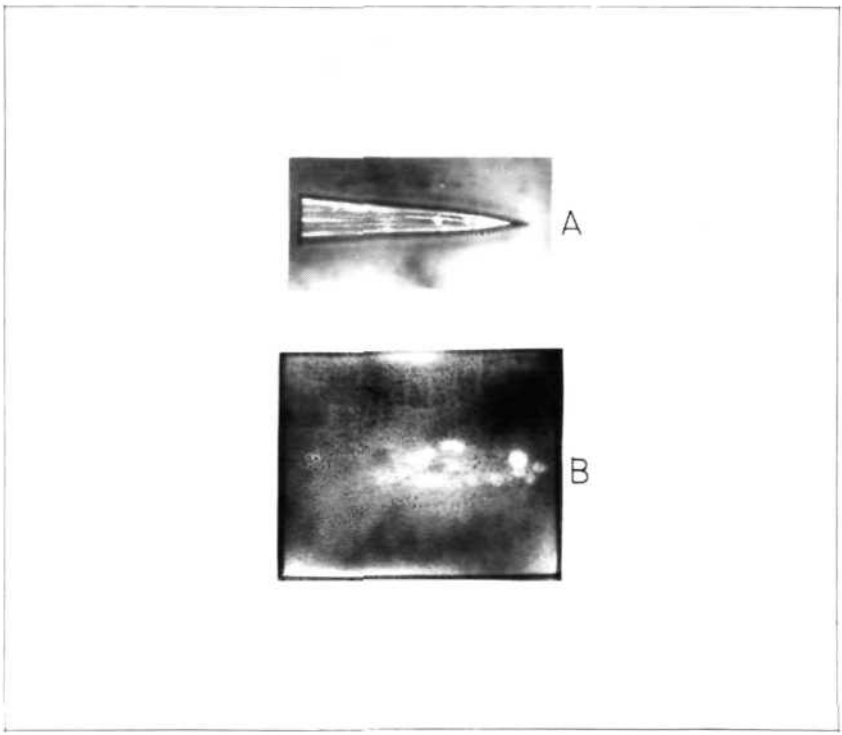

FIGURE 9. "Phantom Leaf Effect": (a) entire leaf aura, (b) aura of image of missing leaf shown in (a).

B. *Sample and Environment:* (1) Size, shape, and surface regularity of sample. (2) Conductivity (moisture content), salt or other local chemicals. (3) Surrounding atmosphere: (*a*) atmospheric pressure, (*b*) humidity, (*c*) temperature, (*d*) chemical content. (4) Complete history of the sample. (5) Cleanliness—lack of dust, specks, stains, moisture.

C. *Films, Plates and Photographic Process:* (1) Film and paper type, ASA, RMS granuality, H-D characteristics, and *all* other film properties. (2) Emulsion properties—dielectric constant and conductance sensitivity to electron excitation, contact pressures (these are not usually published data). (3) Exposure time—continuous, pulsed, long, short, over-exposed. (4) Development—time, temperature, and chemicals used. (5) Reproduction of negatives—magnification, types of paper used (all paper characteristics). (6) For color photographs, peak wavelength sensitivity of dyes and sensitivity to pressure, electrons, and temperature.

D. *Photographic Image Interpretation:* (1) Qualitative—comparisions, relative intensity, shapes, size and structure of aura usually made by the eye. (2) Qualitative—microdensitometer studies of intensities recorded on *calibrated* plates. (3) Color—spectral studies of radiation emitted and of images formed according to quantitative color theory.

In the set of experiments reported here we found lack of control of the pressure on the sample, exposure time, development time, sample structure and preparation, and applied voltage caused the greatest variations in aura for the *same* sample. Indeed, even in cases where the aura was recorded under "identical" conditions, for the same object, the aura had significant variations in its properties. Of course a "significant variation" is a qualitative, subjective opinion.

Conclusions from These Experiments

In this rather short scientific investigation of the Kirlian technique, we were able to turn up a number of artifacts and puzzling signals that after a little thought and study were found to fit into the normal scheme of things. Moist fingers, varying pressures, different paper sensitivity, exposure and development times were responsible for most of the variations in the auras. *We conclude there is no need to evoke psychic phenomena to explain results and there is no evidence that psychic conditions affect the aura patterns.*

There is no reason to relate the aura to a "bioplasma." The body of course does radiate in the infrared. (It is a black body at 98.6° F.) The Kirlian aura is a visual or photographic image of a corona discharge in a gas, in most cases the ambient air. Its color depends on the composition of the air, pressure, and impurities emanating from the sample as well as the voltage and current of the source. Other gases, such as nitrogen, helium, argon, and carbon dioxide, that we have used also produce aura, but with color differences and shapes that depend on the spectroscopic and electrical

properties of the particular gas. (Caution! In no case should hydrogen be used. It is extremely explosive when mixed with air and ignites with a spark. Remember the Hindenburg!)

The discharge ionizes and excites the molecules and atoms in the air, causing light to be emitted. The radiation emitted from excited gases in virtually all physical conditions has been extensively studied by spectroscopists since the early 1800s. The shape, size, intensity, and fine structure of the aura depends on exposure times, conductivities, pulse rates, voltages, and photographic properties of the plates and film used. When there is no applied voltage, there is no discharge. Then there is no aura because there is no light.

There is no evidence as yet that any *feature character* or *property* of the aura pattern is related to the physiological, psychological, or psychic condition of the sample. Although the aura surely depends on some physical properties of the system—i.e., the conductivity of the sample (sweaty fingers, perspiring hands), force exerted on the sample—it also depends on many other complicated effects. There is no doubt that some psychological and physiological conditions do manifest themselves in external signals: lie-detectors can work, heat sensors can detect tumors, shaking hands represent nervousness or illness, and so on. However, the Kirlian technique has not yet been shown to be a direct or meaningful link to these conditions. In fact, while most Kirlian investigators acknowledge the effects of the physical parameters, they make no attempt to standardize their research by controlling the parameters, nor do they appear to be concerned with the significance of changing parameters. Indeed, for the most part, the parameters within their research are only vaguely reported if at all, making replication studies by other researchers impossible.

The difficult and pressing challenge then would be to control the parameters and demonstrate in several specific cases that the aura produces information inaccessible to, or better than, other techniques. Its usefulness then would not need to be advertised; it would be picked up immediately by all laboratories that can use it to extend their research into new directions. Within two months after Roentgen discovered X-rays, his device was used by doctors to examine bones.

The Kirlian aura will most likely remain a fascination to *nonscientific* people because of the ease in producing the aura and its "mysterious manifestations" of sparks, discharges, corona, and aura coupled with the words "life force," "photic energy," "bioplasma," "life energy," and so on. Most Kirlian claims will come from "experimenters" who will combine the complicated effects of gaseous discharges with samples having complicated structure and electrical properties, and film recordings involving complicated photographic processes and interpretations based on ignorance of the phenomena and the need for proper controls.

Bibliography

Aaronson, Steve. 1974. Pictures of an unknown aura. *The Sciences.* New York: New York Academy of Sciences.

Krippner, Stanley, and Daniel Rubin. 1974. *The Kirlian Aura: Photographing the Galaxies of Life.* New York: Doubleday.

Gardner, Martin. 1957. *Fads and Fallacies in the Name of Science.* New York: Dover.

Moss, Thelma. 1975. *The Probability of the Impossible.* New York: New American Library.

Ostrander, Sheila, and Lynn Schroeder. 1970. *Psychic Discoveries Behind the Iron Curtain.* Englewood Cliffs, N.J.: Prentice-Hall.

Pehek, J. O., H. J. Kyler, and D. L. Faust. 1976. Image modulation in corona discharge photography. *Science,* October 15, 263-270.

Singer, Barry. 1981. Kirlian photography. In *Science and the Paranormal,* edited by George Abell and Barry Singer. New York: Scribner's. •

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Ancient Tales and Space-Age Myths Of Creationist Evangelism

TV crusader Jimmy Swaggart resurrects anti-evolution and 'Bible-science' myths.

Tom McIver

IN ONE OF HIS particularly notable telecasts, evangelist Jimmy Swaggart dug up and revived several of the more outrageous anti-evolution and "Bible-science" myths, probably ensuring their continued circulation among the more gullible public for some time to come. Swaggart, who has a television audience of many millions, usually gets in some nasty swipes at evolution in each of his weekly broadcasts, but the resilient folktales and modern myths he related on this particular program (September 30, 1984) are especially noteworthy, both because of their claims of scientific proof and for their sheer preposterousness. They serve as a case study of the tactics and tales of this particular brand of evangelistic creationism and, to a disturbing degree, of the creationist movement in general.

The telecast, part of a crusade message from Honolulu entitled "That I May Know Him" (audiocassette available from Swaggart Ministries), opened with the Joshua's Missing Day story. Swaggart relates how a consultant in the space program tells of some space scientists in Greenbelt, Maryland, who were checking orbital positions of the moon and planets by computer in preparation for a satellite launch. They ran the computer "back and forth over the centuries," but then it abruptly stopped. They consulted IBM. The computer was not malfunctioning, said IBM, but it showed an entire missing day back in elapsed time. The space scientists were stumped, until one of them recalled the Bible story of Joshua, according to which God made the sun stand still for a day when Joshua was fighting the Amorites.

The space scientists checked this out by running the computer back to

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Swaggart at the microphone: An impassioned anti-evolutionist, he is heard by 2 million in the U.S. every week, plus a claimed 74 million worldwide.

Joshua's time. They found that 23 hours and 20 minutes were indeed missing back then—but not quite a whole day. Though slightly short, this did not contradict the scriptural account, since the Bible states that the Lord ordered the sun to stand still for "about a day." This still left 40 minutes unaccounted for, however, and even 40 minutes multiplied over the ages can foul up orbital calculations. Luckily the same fellow remembered that there was also an incident in the Bible in which the sun went *backward;* again the scientists were incredulous, but searched the Bible for lack of any other explanation. Sure enough, in 2 Kings Hezekiah asks Isaiah for a sign from God as proof of His word: namely, that He cause the sun to move backward 10 degrees. Ten degrees is exactly 40 minutes! Thus was the entire Missing Day of the space scientists' computer accounted for, and the satellite was then launched with great success.

Swaggart's on-screen caption gives the *Christian Inquirer* (December 8, 1983) as the source for this tale,[1] but does not name any of the people involved. Swaggart's own journal, *The Evangelist,* had also published the story, after the Honolulu crusade but one month prior to the August 1984 telecast, likewise without names or primary sources. In fact, the story originated with Harold Hill and can be found as a chapter of his book *How to Live Like a King's Kid* (1974). Hill, an 80-year-old electrical

engineer and former president of Curtis Engine Company in Baltimore, claims to have been involved with the Mercury and Gemini space programs at NASA's Goddard Space Flight Center in Greenbelt, Maryland, and to have visited the Bermuda tracking station in a consulting capacity. In his book, Hill tells the story essentially as Swaggart retells it, dating it as 1969 but otherwise providing no documentation or names. Hill (1974, 69) writes that he used the story when "witnessing" in schools and meetings "as just one example of how science is proving that the preposterous things in the Bible are true."

Hill's tale was picked up by an Indiana newspaper and then carried by various news services. A subsequent news story, which Hill asserts is false, reported that he confessed the whole thing was a hoax. Hill adamantly stands by his original story, offering as proof of its legitimacy the number of conversions it has occasioned. "God doesn't save people through false reports," Hill (1974, 71) explains. As to his curious refusal—or inability—to provide any documentation at all for the episode, he responds that this "in no way detracts from its authenticity"; if God said it, then it's true. (Not only is Joshua's story God's Word, but so too, according to Hill, is the NASA episode.) "Quite understandably," he notes, NASA had a tough time responding to all the inquiries they received about their verification of the Missing Day. Hill referred all requests that he himself received to an 1890 book by C. A. Totten, *Joshua's Long Day.* (Totten is apparently the "former professor at Yale University" who is one of the "computer scientists in the space program and mathematicians" described in the *Christian Inquirer* account.)

He also enclosed a tract about his tale "Did the Sun Stand Still?" Swaggart's version is taken almost verbatim from a similar tract, "The Missing Day—As Discovered by Astronauts," which credits the story to a "Longview [Texas] newspaper." The *Bible-Science Newsletter* printed this same version word for word, "The Sun Did Stand Still" (1970, 1), stating that it had appeared in the Spencer, Indiana, *Evening Star.*

Through his King's Kids Korner in Baltimore, Hill also offers *From Goo to You by Way of the Zoo,* a cutesy, derogatory, and remarkably ignorant put-down of evolution intended for young readers. Hill (1976, xiv and 2) makes a great deal of noise about his authority as a genuine working scientist (engineers are the real scientists, as they must produce results, he says)—in contrast to Darwin, who was only a theologian. In this book Hill (p. xiv) mentions that his creationism was inspired by Harry Rimmer and that Rimmer's widow asked him to carry on her husband's scientific work against evolution. Rimmer was a Presbyterian minister who established the Research Science Bureau (staff of one: himself) in Los Angeles and produced such works as *Modern Science and the Genesis Record* and *The Harmony of Science and Scripture,* making him a forefather of modern-day creation-science along with Seventh-day Adventist George McCready Price. Rimmer (unlike Price) advocated "Gap Theory"

creationism, as does Swaggart today (see below).

From Goo to You ridicules the "hairy, reeking, itching ape" proposed by evolutionists as our ancestor and strives mightily to be humorous. Hill (1976, 5-6) maintains that evolutionists today necessarily rely on inheritance of acquired characteristics ("Lamarckian" evolution), which demonstrates their ignorance; instead it proves his own. He also claims (pp. 20-22) that Einstein's theory of relativity is contained in Genesis and includes an appendix listing other discoveries of science already in the Bible. There is another appendix reprinting the creation bibliography from Henry Morris's *Scientific Creationism*—to which Hill adds Rimmer's works, though Morris considers Gap Theory creationism as damnable in the long run as evolution itself. Hill (pp. 88-89) informs us that messages have been received at Jodrell Bank Observatory from extraterrestrial intelligences who he suspects are trying to tell us to "turn on to Jesus," and he repeats the claim, now popular among Bible-scientists, that Jesus is the only possible explanation for the force binding atomic nuclei together (p. 81). Hill claims there is scientific proof of the born-again experience in the "glory meter," a device invented by Donald Liebman, a "completed Jew" (one who accepts Jesus as Messiah and Savior), that measures human energy levels and scientifically shows that born-again Christians have remarkably enhanced

energies (pp. 81-83).

Strict "young earth" creationists would be aghast at many of Hill's smugly told Bible-science revelations. Not only the Gap Theory—that Satanic compromise with evolutionary theory that allows the inclusion of vast geological ages in between the opening verses of Genesis, which strict creationists like Morris are forced to spend much time correcting—but the notion of extraterrestrial life is anathema to rival creationists as well, as it implies either naturalistic evolution of life on other planets or else makes a mockery of God's special creation of mankind and of Christ's redemptory sacrifice by suggesting multiple creations. Institute for Creation Research (ICR) scientists like Morris, and especially physicists Harold Slusher (1983) and Thomas Barnes (1983), reject relativity and quantum mechanics as absurd speculative abstractions and violations of common sense.[2] Most creationists would also be appalled at Hill's suggestion that the Resurrection is explainable by ordinary science and is not supernatural; he says it happens "all the time" in nature, as when a grain of wheat falls, "dies," then grows (p. 67). (Engels used the same example as an illustration of Marxist dialectics: thesis, antithesis, synthesis.)

Nor do all fundamentalists and Bible-scientists accept Hill's Missing Day story as gospel either. In *Noah's Flood, Joshua's Long Day, and Lucifer's Fall,* Ralph Edward Woodrow (who incidentally favors a regional rather than a worldwide Flood) dismisses the NASA-IBM Missing Day tale as "largely fiction" (Woodrow 1984, 101). He suggests instead that Joshua's miracle involved darkening of the sun by a hailstorm (arguing that Joshua wanted respite from the midday heat—not a longer day) and that God moved only the sun's *shadow* on Hezekiah's sundial. Woodrow quotes in full the tract "The Missing Day." *The Long Day of Joshua and Six Other Catastrophes* by Donald Patten et al. (1973) does not see fit even to mention Hill or his story. (Patten is best known for several *Symposium on Creation* volumes of creation-science and for his theory—inspired by Velikovsky—that Noah's Flood was precipitated by a passing ice comet that also caused the Ice Age [singular], thus accounting for the otherwise "inexplicable" quick-frozen Siberian mammoths.) There is a chapter on Joshua's Long Day in *Beyond Star Wars* by William F. Dankenbring (1978), a Gap Theory advocate, who attributes *it* to a comet. (Dankenbring's title refers to the great pre-Adamic war in the cosmos.) John C. Whitcomb, co-author with Henry Morris of *The Genesis Flood,* has a chapter in a Creation Research Society monograph, *Design and Origins in Astronomy,* in which he maintains that God did not alter the earth's rotation during Joshua's Long Day and Hezekiah's Event, but simply changed the light and shadow (Whitcomb 1983, 138-139).

Hill's books are widely distributed in Christian bookstores, despite rival creationist criticism. He has friends in high places—the moon even, if not higher. *From Goo to You* boasts a foreword by Wernher von Braun, a key figure in America's space program. Von Braun, drafted as a young

civilian to be chief rocket engineer for the German V-2 program in World War II, went over to the Americans at the end of the war and played a vital role in the development of the Redstone, Jupiter, and Saturn rockets. He was director of the Marshall Space Flight Center in the 1960s and deputy associate administrator for planning at NASA headquarters until 1972. In his foreword to Hill's book, von Braun mentions astronaut Frank Borman's reply to a Soviet cosmonaut about not seeing God in space ("I did not see Him either, but I saw his evidence"). Astronaut James Irwin wrote a second foreword to the revised 1985 edition.[3] Von Braun also wrote the preface to *Creation: Nature's Designs and Designer* (Utt 1971), a Seventh-day Adventist book.

Clarence Schreur (1983), another NASA scientist (a chemist), from the High Energy Astrophysics lab at Goddard Space Flight Center, argues against both Flood Geology and Gap Theory creationism in his book *Genesis and Common Sense* in order to present a Day-Age interpretation (Genesis "days" of creation, not literally 24-hour days), attempting to reconcile science with the Bible thereby, since he knows the Bible is never wrong. He accepts naive creationist biological and geological arguments and advocates the vapor canopy hypothesis, a regional Flood, and an ice comet as the cause of the Ice Age.

■ America's New Religion ■ An American Travesty
■ Wolf in Sheep's Clothing ■ Christian Versus Public Schools ■ Letters ■ Christian Citizenship
The Evangelist
THE VOICE OF THE JIMMY SWAGGART MINISTRIES
MAY 1984 • VOLUME 16 NUMBER 5
GOD
MAN
MAN=GOD

Swaggart's ministry regularly denounces evolution, as in this monthly publication.

Bible-scientist Gerardus Bouw, a geocentrist as well as a creationist,[4] recently examined Hill's Missing Day story in an article in the *Bulletin of the Tychonian Society,* a journal devoted to geocentricity that Bouw now edits. Bouw, who has a Ph.D. in astronomy from Case Western Reserve and teaches computer science at Baldwin-Wallace College, wrote to Hill requesting more information about his story, explaining to him politely that it didn't make sense and that Hill obviously knew nothing about either computers or astronomy. "Since you evidently got the story second hand," he wrote Hill, could Hill let him know who at NASA he got it from so Bouw could check out a first-hand account (Bouw 1985, 12).

Hill replied that when NASA's Goddard Space Flight Center first opened, a "horrendous technical boo-boo" caused a complete shutdown; he was called in as an outside consultant and "saved the day" by fixing it up. He then hung around and heard about the Missing Day incident, but he does not know the names of those involved. He admits to being "completely dumb about computers" but knows that there was a large team of IBM technicians on hand to get the NASA computer running. Bouw notes that available ancient astronomical evidence (other than the Bible, of course) is inadequate to confirm Joshua's missing day. (Elsewhere, though, Bouw has referred to compelling evidence of many myths and traditions of a Long Day across half the globe and a Long Night in the other hemisphere.) He concludes by asking readers if anyone knows who may have been involved in the NASA-IBM incident.

The Heritability of Morality

Swaggart's second story is an old eugenics parable concerning morality as a heritable trait. The story goes that Jonathan Edwards, the great eighteenth-century revivalist preacher, was born into an immoral and evil family. He inherited these traits, as they were "in the blood," but was miraculously cured of this bad blood after accepting Christ. Swaggart quotes an impressive list of Edwards's descendants, all of the finest moral character and highly eminent pillars of society, as proof of this genetic conversion. I was unable to see whether a source was shown on-screen for this edifying eugenics lesson, but I recognized it as a passage taken virtually verbatim from a 1925 book, *The Evolution of Man Scientifically Disproved,* by the Reverend William A. Williams (1925, 94-95). This amusing little work consists largely of mathematical arguments of the type still favored by many modern creationists, including Morris, who acknowledges Williams as the originator of the probability calculations against evolution and of the population increase argument (Morris 1984, 106). Indeed, Swag-Swaggart gleefully presents both these mathematic arguments in his sermon.

science books and presentations but are expanded on most fully in James Coppedge's *Evolution: Possible or Impossible?* (1973), a book about

"Molecular Biology and the Laws of Chance." Coppedge bills himself as director of the Center for Probability Research in Biology near Los Angeles, bringing Rimmer to mind. Williams's prototype version of the population-increase argument is as follows: If mankind were really two million years old, then the present world population would now be at least 2^{1240}—a number too large even to write out in full—therefore "Q.E.D." (Williams, 1925, 10-11). Williams's book also contains the source of the absurd and hopelessly confused serological arguments that resurfaced recently in the tract "The Evolution Theory Examined," quoted by anti-creationists Frank Awbrey and William Thwaites (1982, 16). This tract quoted Williams (1925, 86-87) nearly verbatim, apparently without acknowledgment. Among other errors, antibody-antigen reactions following interspecies blood transfusions are mistaken for indications of phylogenetic unrelatedness and confused with reactions to poisons.

Swaggart also paraphrased the passage in Williams's book, immediately following the section on the Edwards genealogy, about another family, which Swaggart leaves nameless, who never received Christ and whose descendants consequently were "evil, shiftless, wicked"—criminals who were a great burden on society. Williams, however, *does* name them: They are the Jukes family. Perhaps this explains the staunch evolutionism of Berkeley biochemist Thomas H. Jukes (well known for his study of "molecular clocks" as possible indicators of phylogenetic relationships), who testified against the creationists at the 1981 California trial and who continues to oppose them vigorously.

The notorious Jukes family was first studied in 1877 by Richard Dugdale. Dugdale himself argued that the degeneracy of the "Jukes" (actually a pseudonym) was caused primarily by environmental conditions rather than heredity—a vicious cycle of pauperism, illiteracy, alcoholism, and malnutrition. Rigid hereditarians, however, quickly "adopted" the Jukes family and used the study to support their view of genetic determination, completely misinterpreting Dugdale's conclusions (Carlson 1980). Eugenics advocates read into it the moral that such families should be prevented from reproducing.

In 1900, A. E. Winship reviewed the Jukes study and presented his own study of the noble descendants of Jonathan Edwards in *Jukes-Edwards: A Study in Education and Heredity,* which is apparently Williams's source (direct or indirect). In 1888 a similar study was made of another "degenerate" family, the Ishmaels, and again the eugenicists proclaimed this as proof of their views. The Ishmaels are contrasted to the Edwardses in *The New Decalogue of Science* (Wiggam 1922, 47), in which the "Duty of Eugenics" is the first of the new "Commandments of Science." William Jennings Bryan referred to this book in his intended closing address at the Scopes Monkey Trial (never delivered but widely circulated afterward) as "even more frankly brutal than Darwin."

Darwin's 'Deathbed Confession'

The third tale related by Swaggart on that memorable broadcast was a tear-jerker rendition of a sentimental favorite: Darwin's deathbed confession. Darwin, according to this story, never intended his malicious, speculative theory of evolution to be taken as seriously as it was. He wanted to confess before he met his Maker that he had made it up in his youth, and he wished to make amends for the evil influence caused by the false doctrine of evolution. All this was supposedly told to "Lady Hope," a mysterious figure who hears the dying Darwin's confession and joins him in Bible-reading and hymn-singing.

Swaggart's on-screen caption listed "Lade [*sic*] Hope's Memoirs" as the source for this story—probably a tract, since this wishful rumor has been widely circulated in various religious tracts. The tale is quoted in full in an undated (but probably 1961) pamphlet "Darwin and Christianity" from the Evolution Protest Movement (EPM) of England (now called the Creation Science Movement) written by "A.G.T." (A. G. Tilney). Tilney cites the *Bombay Guardian* (India) of March 25, 1916, as the source of his quoted account, which in turn obtained it from the *Boston Watchman Examiner.* This latter periodical had asked Lady Hope for a written version of the address she had recently given at evangelist D. L. Moody's educational establishment in Northfield, Massachusetts. In a later EPM pamphlet (1970) Tilney acknowledges that the story has been denied by other creationists. In *Creation,* the new EPM journal, further doubts are expressed (1979)—yet in the very next issue C. E. A. Turner triumphantly announces Lady Hope's identity: the former Elizabeth Reid Stapleton-Cotton (d. 1922).

W. D. Burrowes, who writes the (Canadian) *North American Creation Movement Newsletter* (Patten is a co-member of its Council), has expressed his belief in the validity of the Lady Hope story in "Newsletter No. 32" (1984, 3), acknowledging that it "has not yet been fully substantiated." This is in the context of a review of a new book by creationist R. Hedtke, *The Secret of the Sixth Edition,* about the concessions made by Darwin in later editions of the *Origin of Species* as to the inadequacy of natural selection ("Darwin, in his old age, abandoned natural selection"), to which Hedtke attributes Darwin's improved physical and spiritual health in his final years. Burrowes notes, as does Tilney, that such concessions and confessions would account for Darwin's renewed interest in the beauty of nature, which Darwin had claimed in his autobiography to have lost.[5]

Evolution or Creation by University of Madras (India) zoology professor H. Enoch also includes a full version of the story in its 1966 and 1967 editions, but drops it without a word of explanation in the 1977 edition (though proudly including "new evidence" against evolution that had been discovered in the interim). Enoch also cites the *Bombay Guardian* account.

The Lady Hope story was endorsed in 1985 on ultraconservative Wally George's syndicated "Hot Seat" television talk-show (January 12, 1985) on Pat Boone's station in Anaheim, California. A youngster in the audience told George the story on the air prior to a debate on creation vs. evolution between George and a local college student. George, who loudly claims to stand for "God, patriotism and morality," squawked shrilly and mindlessly against evolution, using this story as further proof of its falsity. During the debate he mistakenly attributed the story to a minister in his audience who had regaled George with several anti-evolution tales and slogans, including Hill's phrase "from goo to you via the zoo," and a favorite of Swaggart's, "nothing working on nothing begat everything."

The Scientific Proof of Origins by Creation, an exceptionally incoherent little book by John MacAlister (a Day-Age advocate), also includes the Lady Hope story, attributing it to an article written at the time of Darwin's death in *The Gleaner* (MacAlister n.d., 34). MacAlister's assessment:

> What a challenge to every "evolutionist," today! . . . What a rebuke to ALL who neglect the Life-saving Information in the scientifically provable Bible!
>
> Fortunate, indeed, in these last days of Choice-Making, are we to have this account of Darwin's closing hours, with which to counteract the Life-losing brainwash by the atheist-"evolutionists," who never TELL us that their hero died a repentant Bible-believer and a believer in his Creator. Darwin died exalting the Word of God and the Lord Jesus—after nearly a whole lifetime in error.
>
> These facts you won't read in the commUNist-written-and-published "textbooks" from New York. [p. 35]

However, in a recent (1984) article in the *Creation Research Society Quarterly,* Wilbert Rusch, president of the CRS, cautions fellow creationists against taking the Lady Hope story too seriously. Rusch researched the tale rather thoroughly in the 1970s when a tract based upon it, "Darwin's Last Hours" (1979), was being distributed to high school students by creationist proselytizers. He concluded that it was "wishful thinking," and considers that it would be "very unwise" for Christians to use it in arguing against evolution (Rusch 1984, 37-39). Ian Taylor, in his solidly creationist but extensively researched book *In the Minds of Men: Darwin and the New World Order* (based on his work for the "Crossroads Creation Series" shown on Canadian television), also renounces the Lady Hope story, regarding it as a pious fraud (Taylor 1984, 136-137). He correctly emphasizes that Darwin developed his theory over many years—it was not merely an idle speculation of his youth, as the tract version has it—and that Darwin did not die in the autumn as claimed in the story, among other errors. Taylor acknowledges that Darwin came to believe less—not more—in a Creator God as he grew older and suggests (on very little evidence) that it was Darwin's wife—a good religious woman, though

infected with Unitarian beliefs—who invented the story after Darwin's death.

Rusch (1984, 38) notes that supporters of the Lady Hope story would have to believe in a "monumental conspiracy" by evolutionists to conceal Darwin's abandonment of his youthful speculations.[6] One creationist who does find massive conspiracies appealing is Malcolm Bowden, British author of *The Rise of the Evolution Fraud.* Bowden (1982, 192) bases his account of the Lady Hope story on Tilney's EPM pamphlet. He criticizes an earlier article of Rusch's that questioned the authenticity of the tale and maintains that the evidence against Darwin's return to the true Christian faith is unconvincing. After all, he adds, it is hard to imagine a religious Christian fabricating and publishing such a story.

In "The Myth of Darwin's Conversion," written before the references cited above, Hector Hawton (1958, 4) pointed out that Darwin's daughter issued a forceful denial in 1922 refuting the whole story, declaring that Lady Hope was not present during Darwin's last illness and dismissing the tale of his conversion as an American fabrication. "Surely," wrote Hawton in amazement after the Lady Hope tale resurfaced in the pages of *The Scotsman,* "no one can have the hardihood to pull that chestnut out of the bag once again?"

Impassioned Oratory, Persistent Wishfulness

The lesson here seems to be that fundamentalist anti-evolutionists are a very hardy and persistent lot, blessed with an abundance of wishful thinking. And Jimmy Swaggart is among the most determined and influential of them all. An old-time Pentecostal (Assemblies of God) revivalist preacher, Swaggart is seen by more than two million U.S. television viewers every week (Arbitron); Swaggart himself claims 74.1 million viewers worldwide in 76 countries. He also claims to have saved half a million souls last year alone. His traveling crusades play to packed arenas and stadiums in every region of the nation—not just the "Bible Belt"—and even abroad. (In a recent crusade in New York, Swaggart reports that 4,000 people received the Holy Spirit and that a thousand were speaking in tongues.) Swaggart regularly vilifies evolution along with its associated evils of secular humanism, materialism, atheism, and communism. At the dedication ceremony of his new World Ministry Center at his Baton Rouge, Louisiana, headquarters (during which he denounced these evils with his usual flamboyance), a Reagan aide read a personal message from the President, and Louisiana's governor and ex-governor were prominently in attendance (June 26, 1983, telecast).

Swaggart has a powerful preaching style and is a highly effective demagogue. Striding about the stage brandishing a Bible, he builds beautifully cadenced crescendos of impassioned oratory, punctuated by fervently shouted repetitive litanies of pounding, rhythmically alliterative exhorta-

Swaggart's video-cassette series endorses the Gap Theory, supports a vast age for the earth.

Hill's put-down of evolution for younger readers.

tions and denunciations. Swaggart is also a highly accomplished musician who claims to have sold more gospel-music albums than any other recording artist. He learned to play on the same piano as his first cousin Jerry Lee Lewis, one of the founders of rock 'n' roll, though Swaggart considers rock music—and even country music—to be quite literally Satanic. (Another cousin is singer Mickey Gilley of Texas nightclub fame.)

Swaggart is openly contemptuous of scientific knowledge and academics, and he is the most blatantly anti-intellectual of the TV evangelists. In general, Swaggart relies on old-fashioned, early twentieth-century fundamentalism,[7] harking back to the days when evangelists could pit their biblical literalism directly against science and modernism, declaring that, if there be any disagreement between science and the Bible, then it is science (science "falsely so-called") that must be wrong because the Bible is wholly true and inerrant.[8] Though he does not feel the need to defer to the power and authority of science as rivaling that of revealed Scripture, as Bible-scientists seem to, Swaggart is not above using occasional pseudoscientific anecdotes or pious rumors invoking science when they support his biblical literalism, as the examples in this article demonstrate.

The most complete statement of Swaggart's anti-evolutionism is a set of three cassette tapes, *The Pre-Adamic Creation and Evolution*. Interestingly, Swaggart devotes the first half to a refutation of the young-earth creationist position, through the best-known creation-science groups—ICR, CRS, Creation-Science Research Center, Bible-Science Association—and

others are all adamantly young-earth. These young-earth flood-geology creationists, who accuse the old-earth creationists of heresy (literally) for compromising with evolutionist theory, argue that a straightforward literalist reading of Genesis requires a universe not older than 6,000 to 10,000 years (an age that true science confirms, of course). But Swaggart teaches that the Bible does not specify any age, and admits that geologists are "probably correct" in claiming vast ages. "The evolutionist would beat your head in if you try to think that this earth is only six thousand years old," he warns.

Swaggart, like Rimmer before him and many creationists still, endorses the Gap Theory, first proposed in 1814 and given respectability by inclusion in the Scofield Reference Bible since 1909. This theory holds that there is a tremendous gap between Genesis 1:1 ("In the beginning, God created the universe") and the very next verse, Genesis 1:2 ("And the earth was ['became'] without form and void"). Into this gap go all the vast geological ages so well confirmed, as Swaggart admits, by modern geology, paleontology, and other sciences. Lucifer reigned over this pre-Adamic world, and when he rebelled against God all his subjects rebelled with him. Lucifer became Satan; his subjects became the demons that plague us today. This pre-Adamic creation was cursed and flooded by God, who made it a waste: without form and void. Then, a few thousand years ago, the familiar six-day creation—a re-creation really—occurred, in which Adam was created. Unlike the young-earth flood-geology creationists with their pre-Flood "water (vapor) canopy" and radically different climatic conditions, who say that Noah brought dinosaurs onto the Ark, Swaggart says that the (post-Adamic) pre-Flood world was similar to today's and that dinosaurs and other fossils are actually remains of the pre-Adamic world.

The second half of the cassette series is a scathing attack on evolution: the "philosophy of Godless chance" peddled by atheists and communists. The argument is primarily that evolution is immoral and anti-Christian, but Swaggart throws in a few preposterous examples of what evolutionists purportedly teach: that legs came from warts, that eyes came from freckles, and that one of the ape-men proposed as a human ancestor turned out to be a hay-raking machine made in 1890. (Except for the last, these examples are apparently taken from an essay by William Jennings Bryan written before the 1925 Scopes Trial and reprinted in pamphlet form by Sword of the Lord (Bryan n.d., 21.) Evolution, in short, is Satan's lie, the biggest lie ever, and it is destroying our faith in God and our society. "No sensible, right-thinking individual, that has an iota of sense, can ever begin to believe in evolution" (November 11, 1984, telecast):

> I've said it before and I'll say it again: any teacher that would stand before children and teach evolution is one day going to stand before God and answer to God for subverting the minds of children.

Notes

1. The *Christian Inquirer* lists Tim LaHaye (co-founder, with Henry Morris, of Christian Heritage College, on whose campus the Institute for Creation Research is located) on its editorial board, several senators on its board of reference, and Surgeon General C. Everett Koop (an outspoken anti-abortionist on biblical grounds and reputedly a creationist) as one of its consultants. The *Christian Inquirer* published a "scorecard" on moral and family issues for all U.S. congressmen in its 1984 election issue and also publishes a Bible prophecy newsletter.

2. Marsden (1980), a historian of fundamentalism, and Cavanaugh (1985), a sociologist, both argue that creation-scientists operate according to an early-modern Common Sense philosophy of naive empiricism—an anti-speculative philosophy harking back to the ideals of Newton and Bacon that eschews theorizing and professes to rely on fact alone.

3. Other astronauts have also spoken out for creationism, Jack Lousma (1983, 11) wrote: "If I can't believe that the spacecraft I fly assembled itself, how can I believe that the universe assembled itself? I'm convinced only an intelligent God could have built a universe like this."

James Irwin formed the evangelical High Flight Foundation the year after he walked on the moon and nearly lost his life on Mt. Ararat leading a High Flight expedition searching for Noah's Ark. A High Flight space-education program "enables former astronauts to share the experiences of the space program and its derivative values with school children." John Glenn, while not himself commenting on creationism, has appeared in the Moody Institute of Science "Sermons from Science" films—a series that frequently attacks materialistic, atheistic evolution—to affirm how trust in flight instruments increased his faith in God (Moody Institute of Science 1967). Charles Duke appears in the creationist film *Creation/Evolution: Weighing the Evidence* (Quadrus Media Ministry 1982), testifying that he studied geology at NASA but discovered that science is always changing and concluded that evolution was more a matter of faith than was creation.

In the book and feature film *In Search of Noah's Ark* (Balsiger and Sellier 1976, 193; Sun Classic Pictures 1976), principal systems analyst Frederick Waltz of the EROS electronic data analysis center demonstrates how computer analysis of Landsat photographs of Mt. Ararat confirm unique light reflectivity properties for a spot where climbers have reported the Ark; Senator Frank Moss, then chairman of the Aeronautical and Space Sciences Committee, is shown and quoted publicly endorsing such satellite evidence. Von Braun himself wrote a letter in 1972 to the California Board of Education that was read by a creationist board member at the science textbook hearings. It advocated the "presentation of alternative theories for the origin of the universe, life and man"—that is, creationism—and affirmed that the universe is clearly the product of Design. This letter is distributed in tract form ("The Case for Design: A Letter from Wernher von Braun—NASA") by the Bible-Science Association and by fundamentalist Texas textbook monitors Mel and Norma Gabler.

Robert Jastrow, founder and director of the Institute for Space Studies at the Goddard Space Flight Center, writes frequently about science's confirmation of theism (his *God and the Astronomers* was excerpted in *Reader's Digest*). Jastrow considers evolution "plausible" but not "certain." In *The Intellectuals*

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Speak Out About God (Varghese 1984), which has a foreword by President Reagan and is intended as a "theistic manifesto," a number of scientists, including Jastrow and several prominent old-earth creationists, attack "naturalistic" science for neglecting God and the supernatural. (They also get in some digs at the young-earth creationists, who they feel give creationism a bad name.)

4. Creationists (both young- and old-earth), geocentrists, and flat-earthers all appeal to a literalist interpretation of the Bible, and all justify their positions by insisting that, if special creation (or geocentricity, or a flat earth) were to be doubted, then the rest of the Bible would eventually be questioned and rejected as well. These positions may be considered (relatively speaking!) the liberal, moderate, and conservative branches of Bible-science (see Schadewald 1981, 82). While flat-earthers are rare (but not extinct), geocentrists comprise a significant minority of today's creationist Bible-scientists.

5. Arthur Koestler, in his stimulating book *The Act of Creation,* used the same autobiographical passage of Darwin's "atrophy" of his "higher aesthetic tastes" to argue (misleadingly) that Darwin had but one great flash of insight early in life and spent all his remaining years merely working out the details (Koestler 1964, 693-694). Koestler, a brilliant writer and perceptive critic of communism, was also an advocate of "Lamarckian" evolution—and a critic of Darwinian natural selection as well as a believer in psychic phenomena. Gertrude Himmelfarb, in an important but unsympathetic study of Darwin, *Darwin and the Darwinian Revolution,* which Bowden and other creationists have relied heavily upon, similarly makes much of these passages (Himmelfarb 1968:142-143).

6. Taylor, though he realizes that Darwin never recanted his evolutionism to return to true Christianity, also believes in a gigantic—but much subtler—conspiracy: the "new world order" of his title refers to the aims of the secular humanists who permeate our society with evolutionist, one-world indoctrination.

7. Strictly speaking, Pentecostals, with their manifestations of the Holy Spirit, such as healing by laying-on of hands and speaking in tongues, are not considered true fundamentalists. Fundamentalism (narrowly defined) allows only the Bible as manifestation of God's Word and revelation.

8. In a sense, today's creationist Bible-scientists reach back even further, to the pre-Darwinian era of "natural theology," when God's Word was held to be evident in the Book of Nature as well as in revealed Scripture, before science threw biblical literalism into disrepute. Unlike natural theology and early modern science, which arose in part due to assumptions of a God who created the natural world according to fixed and discoverable laws for man to have dominion over, early twentieth-century fundamentalism was largely a reaction *against* modern theoretical science—especially evolution. Creationists and Bible-scientists today, however, are generally strong proponents of technological progress, and many have advanced technological training, especially in engineering and applied sciences, and particularly in the aerospace, electronics, and computer industries.

References

Anonymous. Undated. "The Missing Day—As Discovered by Astronauts." Dallas: International Bible Assoc.

Awbrey, Frank T., and William M. Thwaites. 1982. "A Closer Look at Some Biochemical Data that 'Support' Creation." *Creation/Evolution:* 7:14-17.

Balsiger, Dave, and Charles E. Sellier, Jr. 1976. *In Search of Noah's Ark.* Los Angeles: Sun Classic Books.

Barnes, Thomas G. 1983. *Physics of the Future: A Classical Unification of Physics.* El Cajon, Calif.: Institute for Creation Research.

Bouw, Gearardus D. 1985. "NASA's Missing Day?! *Bulletin of the Tychonian Society,* 39:9-13.

Bowden, Malcolm. 1982. *The Rise of the Evolution Fraud.* San Diego: Creation Life Pub.

Bryan, William Jennings. Undated. "The Bible or Evolution?" Murfreesboro, Tenn.: Sword of the Lord.

Burrowes, W. D. 1984. "The Secret of the Sixth Edition of 'The Origin.' " *North American Creation Movement Newsletter,* 32:2-3.

Carlson, Elof Axel. 1980. "R. L. Dugdale and the Jukes Family: A Historical Injustice Corrected." *BioScience,* 30:535-539.

Cavanaugh, Michael A. 1985. "Scientific Creationism and Rationality." *Nature,* 315:185.

Coppedge, James F. 1973. *Evolution: Possible or Impossible?* Grand Rapids, Mich.: Zondervan.

Dankenbring, William F. 1978. *Beyond Star Wars.* Altadena, Calif.: Triumph Pub.

"Darwin's Last Hours." 1979. *Creation* (Journal of the Evolution Protest Movement), 2(6):3.

Enoch, H. 1967. *Evolution or Creation.* London: Evangelical Press.

George, Wally. 1985. *Hot Seat,* January 12, 1985. Anaheim, Calif.: KDOC-TV.

Hawton, Hector. 1958. "The Myth of Darwin's Conversion." *The Humanist* (British), 73:4-5.

Hill, Harold (with Irene Harrell). 1974. *How to Live Like a King's Kid.* Plainfield, N.J.: Logos.

———. 1976. *From Goo to You by Way of the Zoo.* Plainfield, N.J.: Logos. (Rev. and expanded ed., 1985, Fleming H. Revell, Old Tappan, N.J.)

Himmelfarb, Gertrude. 1968 [1959] *Darwin and the Darwinian Revolution.* New York: W. W. Norton.

Koestler, Arthur. 1964. *The Act of Creation.* New York: Macmillan.

"The Longest Day," 1984. *The Evangelist,* 16 (8):34.

Lousma, Jack. 1983. "Astronaut on Creation." *Ex Nihilo* (int'l ed.), 1(4):11.

MacAlister, John. Undated. *The Scientific Proof of Origins by Creation.* Privately published (Midland, Tex.).

Marsden, George M. 1980. *Fundamentalism and American Culture.* New York/Oxford: Oxford Univ. Press.

Moody Institute of Science. 1967. "Signposts Aloft" ("Sermons from Science" film series). Whittier, Calif.

Morris, Henry M. 1984. *History of Modern Creationism.* San Diego: Master Book Pub.

Patten, Donald W., Ronald R. Hatch, and Loren G. Steinhauer. 1973. *The Long Day of Joshua and Six Other Catastrophes.* Seattle: Pacific Meridian.

Quadrus Media Ministry. 1982. *Creation/Evolution: Weighing the Evidence.* Rockford, Ill. (film).

Rusch, Wilbert H. Sr. 1984. "Darwin's Last Hours Revisited." *Creation Research Society Quarterly,* 21(1):37-39.

Schadewald, Robert. 1981-82. "Scientific Creationism, Geocentricity, and the Flat Earth." SKEPTICAL INQUIRER, 6(2):41-48.

Schreur, Clarence. 1983. *Genesis and Common Sense.* Prescott, Ariz.: Ralph Tanner Associates.

Slusher, Harold. 1983. Institute for Creation Research "Summer Institute" lectures. El Cajon, Calif.

Sun Classic Pictures. 1976. *In Search of Noah's Ark* (film). Los Angeles.

"The Sun Did Stand Still." 1970. *Bible Newsletter,* 8(4):1, April 15.

Swaggart, Jimmy. 1984. "That I May Know Him" (audio cassette). Baton Rouge: Jimmy Swaggart Ministries. (Orig. sermon, Honolulu March 30, 1984; telecast September 30, 1984.)

———. 1984. *The Pre-Adamic Creation and Evolution* (3 audiotape cassettes). Baton Rouge: Jimmy Swaggart Ministries.

Taylor, Ian T. 1984. *In the Minds of Men: Darwin and the New World Order.* Toronto: TFE Pub.

Tilney, A. G. Undated (1961?). "Darwin and Christianity." Evolution Protest Movement Pamphlet No. 80.

———. 1970. "Charles Darwin: The Man." Evolution Protest Movement Pamphlet No. 176.

Turner, C. E. A. 1979. "Darwin and Lady Hope." *Creation* (Journal of the Evolution Protest Movement), 2(7):4.

Utt, Richard H., ed. 1971. *Creation: Nature's Designs and Designer.* Mountain View, Calif.: Pacific Press.

Varghese, Roy Abrams, ed. 1984. *The Intellectuals Speak Out About God.* Chicago: Regnery Gateway.

Whitcomb, John C. 1983. "The Bible and Astronomy." In *Design and Origins in Astronomy* (Creation Research Soc. Monograph Series: No. 2), George Mulfinger, ed. Norcross, Ga.: Creation Research Soc. Books.

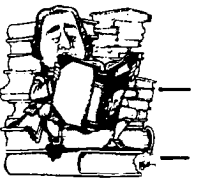
Wiggam, Albert Edward. 1922. *The New Decalogue of Science.* Garden City, N.Y.: Garden City Pub. Co.

Williams, William A. 1925. *The Evolution of Man Scientifically Disproved.* Camden, N.J.: Rev. William A. Williams.

Winship, A. E. 1900. *Jukes-Edwards: A Study in Education and Heredity.* Harrisburg, Penn.: R. L. Myers.

Woodrow, Ralph. 1984. *Noah's Flood, Joshua's Long Day, and Lucifer's Fall.* R. Woodrow.

Book Reviews



A Heady Quest for Transcendence

Beyond the Brain: Birth, Death and Transcendence in Psychotherapy. By Stanislav Grof. State University of New York Press, Albany, 1985. 444 pages. $10.95, paper.

Richard Morrock

THERE IS A well-known tale about famed psychologist William James and his attempt to expand his consciousness by sniffing ether, which was the nineteenth-century equivalent of dropping acid. While under the influence of the ether, James was struck by a revelation that seemed to explain the secret of life. He scribbled it down on a piece of paper, and then passed out. In the morning, he had a vague recollection that some transcendental truth had been revealed to him, but he couldn't remember what it was. Then he discovered the slip of paper on which he had written the secret. "The entire universe," it read, "is permeated with the smell of turpentine."

This little anecdote illustrates an important fact about the relationship between drugs, the mind, and reality. By taking certain kinds of psychoactive drugs, one's ability to distinguish between subjective and objective events can be temporarily suspended. An idle perception—the smell of the ether, for example—can be escalated into the secret of the universe.

A century or so after James's experiment, Dr. Stanislav Grof, a Czechoslovak-born psychiatrist who now teaches at Johns Hopkins, has produced a lengthy work, based largely on his experiments with LSD, that repeats James's error and carries it even further. The key thesis of *Beyond the Brain* is that the "Newtonian-Cartesian paradigm," as Grof terms it, is now obsolete and that many of our emotional and even political problems stem from perinatal (birth-related) and transpersonal causes.

Grof states that "Western science is approaching a paradigm shift of unprecedented proportions, one that will change our concepts of reality and of human

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nature, bridge the gap between ancient wisdom and modern science, and reconcile the difference between Eastern spirituality and Western pragmatism" (p. 16). He speaks of scientific proof of such things as "telepathy, clairvoyance, astral projection, remote viewing, psychic diagnosis and healing, [and] psychokinesis," mentioning in this connection such authorities as J. B. Rhine and the team of Russell Targ and Harold Puthoff (p. 29)—names familiar to readers of this journal. Grof even appears convinced that "each of us contains the information about the entire universe or all of existence, has potential experiential access to all of its parts, and in a sense *is* the whole cosmic network" and that "transpersonal experiences can mediate access to accurate information about various aspects of the universe previously unknown to the subject" (pp. 44-46).

Heady stuff, indeed. It should be fairly easy for Grof to prove these claims by producing an LSD user who can decipher inscriptions in a lost language or lead archaeologists to some previously unknown site. So far, they have not been presented.

Had he published *Beyond the Brain* in the sixties, Grof might today be more widely known than Timothy Leary. But now there are fewer people interested in plunging the depths of their unconscious—partially, no doubt, because they have observed the trail of burned-out basket-cases and mindless cult groupies the psychedelic-drug phenomenon has left in its wake. Grof says very little about the unpleasant side-effects of his drug-induced consciousness expansion. The phrase "bad trip" has no place in his lexicon. He prefers to use the term "negative transmodulation," which may or may not mean the same thing, but certainly doesn't sound as threatening.

Some might discover that they have the same problem with Grof as with Count Alfred Korzybski, popularizer of general semantics, whose work was both brilliant and original, but not at the same time. Where Grof is at his most brilliant, as in his discussion of the effects of birth traumas, he is the least original; much of what he says on the subject is borrowed from Lloyd de Mause, who has researched the connection between birth imagery and war, and from Arthur Janov, whose primal therapy places considerable emphasis on birth traumas as a major contributing cause of neurosis. Curiously, Janov is the psychological theorist Grof is most critical of.

And where Grof is most original, he is the least brilliant. Take, for example, his explanation of coprophilia, the perversion that involves getting a sexual high by smearing oneself with excrement. "The natural basis of this seemingly extreme and bizarre deviation," writes Grof, "is the patient's having experienced as a newborn child oral contact with feces, urine, blood, or mucus at the moment when, after many hours of agony and vital threat, the head was released from the firm grip of the birth canal" (pp. 216-217), an interesting hypothesis that overlooks the possible role of parental neglect and too strict toilet training. It also ignores the fact that there are no blood fetishists—or at least so few that psychiatrists have yet to coin a Greek word to describe them. Then again, what about leather fetishists, whose tribe is certainly more numerous than the coprophiliacs? Were their obstetricians waiting for them with catcher's mitts when they emerged from the womb?

If Grof's theories about the "perinatal matrices" seem a bit off base, by the time he gets to the "transpersonal matrix," he isn't even in the ball park. One would hardly argue with Grof's claim that persons who undergo LSD therapy experience vivid hallucinations in which they see things through the eyes of other

people, remote ancestors, animals, plants, or even inorganic objects. LSD seems to have the effect of breaking down the normal filtration system of the brain, which allows us to distinguish between perceptions, memories, and figments of our imagination. Psychotics experience much the same thing without benefit of psychedelic drugs, and most of us do this every night when we dream. Where Grof goes wrong is in assuming that these hallucinations reflect some aspect of actual reality that is inaccessible to the blinkered "Newtonian-Cartesian" scientists. In other words, Grof is prepared to accept the notion that the universe really *is* permeated with the smell of turpentine.

Grof could benefit by familiarizing himself with the case of "Bridey Murphy," in which the alleged previous life recounted by a hypnotized subject turned out to be based on stories heard in childhood from an Irish nursemaid. One of his patients experienced something similar—not as a result of taking LSD, but in a Groffian procedure called "holonomic integration," akin to meditation, which has a similar, if milder, effect. After undergoing a series of violent body spasms, the patient, Gladys, began to chant in an unknown language.

> An Argentinian psychoanalyst present in the group recognized that Gladys had chanted in perfect Sephardic, a language he happened to know. He translated her words as: "I am suffering and I will always suffer. I am crying and I will always cry. I am praying and I will always pray." Gladys herself did not speak even modern Spanish, not to say Sephardic, and did not know what the Sephardic language was. [p. 356]

The implication here, especially in the context of the rest of *Beyond the Brain,* is that Gladys was reliving some trauma from a past life. It is somewhat of a disservice to Grof's readers, not to mention the patient, to leave things at that. To start with, there isn't any such language called "Sephardic," although there is a Ladino language, spoken by Sephardic Jews in some countries, which is basically Spanish written in Hebrew characters. One would be curious to know how the psychoanalyst identified the chant as Ladino on the basis of only a few words, since the spoken forms of Ladino and Spanish are almost identical. And it should be kept in mind that there are no prayers in Ladino, since Jews traditionally pray in Hebrew.

After sticking his neck out this far on behalf of reincarnation, Grof then qualifies his claims by saying, "Whether or not experiences of this kind reflect 'objective reality,' their therapeutic value is unquestionable" (p. 357). Frankly, it would be a lot easier to accept this claim if Grof had included a few figures concerning how many of his patients are cured of specific symptoms, as opposed to those who are not or who develop new ones. •

The Richness of Evolutionary Views

What Darwin Began. Edited by Laurie R. Godfrey. Allyn and Bacon, Boston, 1985. 312 pp. $15.00, paper.

John R. Cole

IN *WHAT DARWIN BEGAN,* Laurie Godfrey brings together a comprehensive series of papers, all written for the educated layman, covering almost all of the current evolutionary challenges to neo-Darwinism. The book also includes a useful history of evolutionary ideas by Kenneth Kennedy and a discussion of Alfred Russel Wallace by Stephen Jay Gould. Alice Kehoe writes on modern anti-evolutionism; Kenneth Jacobs, on current knowledge about human evolution.

However, the meat of the book lies in the section dealing with the central issues of current and past Darwinian controversies, often by their originators or strongest champions. Thus we see chapters on neutral evolution and the role of chance in evolution by Motoo Kimura and David Raup, Niles Eldredge on evolutionary tempo and mode (punctuationalism), an analysis of punctuationalism by Jeffrey Schwartz and Harold Rollins, Shelley Saunders on the ongoing issue of the heritability of acquired characteristics, and Steven Schafersman on the cladistics controversy. Arthur Caplan addresses and refutes Popper's sometime belief that natural selection is tautological and unscientific, and Godfrey shows rather devastatingly the differences between Herbert Spencer, Darwin, and contemporary defenders of Spencer as Darwin's mentor and on the general idea of "progress" in evolution. The late George Abell on the origin of the cosmos, Harold J. Morowitz on the origin of life, and James Valentine on the origins of complex animals are worth the price of admission—especially combined with the Eldredge, Kimura, Raup, Caplan, and Godfrey chapters.

As the editor promises, there are enough ideas in *What Darwin Began* to keep any interested reader awake. It reveals the richness and variety of evolutionists' views of life, often at odds with traditional theory, making this book a valuable companion to any standardized, neo-Darwinist textbook. Whether the ideas finally prove right or wrong, they reveal the excitement of evolutionary theory, in striking contrast to the stultified view of today's anti-evolutionists. These arguments (or some of them) may prove wrong, but they are must reading for any biology student and anyone interested in the current state of avant-garde evolutionary thought. Creationists will see exciting controversy as proof of Darwin's downfall, but only a fool can overlook his genius, noted in the editor's quotation from Loren Eiseley's evocation of Darwin's view of life, from dandelions to lions to humans: "We are all one—all melted together." It seems so obvious now. So do gravity and heliocentricity. Fifty years hence, the ideas proposed in some of these chapters will seem totally obvious, and others will no doubt have been discarded or greatly modified; but meanwhile they provide an access to the ground floor of the next Darwinian revolution, which just may supplant or modify the aging "New Synthetic Theory," which is still very much alive. •

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Some Recent Books

Frazier, Kendrick, ed. *Science Confronts the Paranormal.* Prometheus Books, Buffalo, N.Y., 1986. 379 pp. $15.95 paper. This new collection includes 38 articles published in the SKEPTICAL INQUIRER in the past five years by 33 different authors, including Martin Gardner, James Randi, Paul Kurtz, Isaac Asimov, Stephen Toulmin, Piet Hoebens, and Ray Hyman. Divided into sections on Parapsychology and Belief, Expectation and Misperception, Claims of Mind and Distance, Claims of Mind and Matter, Claims of Mind and Body, Psychic Flim-Flam, Astrology, UFOs, Fringe Archaeology, Creationism and Shroud Science, and Cryptozoology.

Coleman, Daniel. *Vital Lies, Simple Truths.* Simon and Schuster, New York, 1985. 287 pp., $17.95. Subtitled "The Psychology of Self-Deception," this is a wide-roaming overview of the subject of psychological blind spots. These blanks in our awareness due to causes deep within our consciousness are a way of trading full awareness for a sense of comfort and security. Deals with the trade-off between pain and attention, psychological defense mechanisms, and the construction of social reality.

Kurtz, Paul, ed. *A Skeptic's Handbook of Parapsychology.* Prometheus Books, Buffalo, N.Y. 1985. 727 pp. $34.95 cloth, $16.95 paper. Comprehensive collection of essays by leading skeptics and parapsychologists. A detailed evaluation of parapsychology and psychical research from a responsible, skeptical viewpoint. Addresses such questions as: Has ESP been demonstrated? What do critics say about the work of J. B. Rhine, S. G. Soal, the British Society for Psychical Research, and others? Includes skeptical evaluations of near-death experiences, life after death, ghosts, and other "paranormal" concepts. Many notable articles, e.g., Ray Human's 94-page critical historical overview, parapsycholgist Susan Blackmore's tale of her ten years of negative results, an annotated bibliography, and an index add to its reference value.

Articles of Note

Barrett, Stephen. "Commercial Hair Analysis: Science or Scam?" *Journal of the American Medical Association"* 254:1041-1045, Aug. 23/30, 1985. Physician sent hair samples from two healthy teenagers under assumed names to 13 commercial laboratories that perform multimineral hair analysis, a fad method for purported nutritional analysis. Levels of most minerals reported varied for identical samples sent to the same laboratory and from laboratory to laboratory. Food supplements recommended varied widely in types and amounts. Most reports contained computerized interpretations that were bizarre and potentially frightening to patients. "It is obvious that most of the laboratories covered in this report made claims that were without scientific

foundation."

Beardsley, Tim. "Parapsychology: MacLab, St. Louis, to Shut." *Nature,* 317:6, Sept. 5, 1985. News report on closing of the McDonnell Laboratory for Psychical Research, with perspectives from discussions with James Randi.

Bennetta, William J. "Looking Backward." *Pacific Discovery* (California Academy of Science), October-December 1985, pp. 23-28. Excellent report on "one of the ignoble traditions of textbook publishing in the United States: corrupting evolutionary biology, and biology as a whole, for the sake of placating creationists." Says Bennetta, a California consultant, "Some publishers are offering biology books or life-science books that don't discuss evolution, don't mention the word *evolution,* and are no more relevant to contemporary science than are, say, the San Francisco telephone directories." More typical are books that do treat evolution but confine it, isolate it, and "simply conceal the importance of evolutionary thinking in modern biology."

Bennetta, William J. "Faking It." *Pacific Discovery* (California Academy of Science), October-December 1985, pp. 29-34. Companion article to the one above, consists of a thorough and devastating critique of seven new life-science textbooks submitted for use in California's public schools. The books mangle and muffle the subject of evolution, all failing to show how evolution shapes life and how the theory of evolution joins other sciences to form a coherent picture of the living world. "None, in fact, presents anything resembling science of the twentieth century. . . . The viewpoint is that of a sixteenth-century monk or, at best, of an eighteenth-century naturalist" enumerating parts and providing names for them. "This kind of science--this descriptive diversion that has no intellectual core and no integrative principle—doesn't make sense and can't make sense." Bennetta's analyses played a role in the decision by the California State Board of Education to require revisions in some of these books.

Berman, Sanford. " 'In the Beginning': The Creationist Agenda." *Library Journal,* Oct. 15, 1985, pp. 31-34. Article for professional librarians about the efforts of creationists to influence textbooks, curricula, and the books libraries buy through political pressure. Contains many references to literature intended to counter creationist writings.

Brown, Leslie. "The 'Cult Beat.' " *Columbia Journalism Review,* November-December 1985, pp. 42-48. Article on the hazards of covering religious sects. Proposes that what matters most is not the strangeness of a sect's activities but the legality of those activities and their effect on children, few of whom are members by choice. Also suggests that reporters on this beat need a sturdy psyche and ability to maintain an emotional distance to avoid falling prey to the techniques that influence people into joining sects.

Carlson, Shawn. "Double-Blind Test of Astrology." *Nature,* 318:419-425, Dec. 5, 1985. See News & Comment, this issue.

Goh, E. C. "Astronomers vs. Astrologers." Science Newswire, syndicated article distributed to newspapers in October 1985. Good article on the scientific effort to educate the public in the differences between astronomy and astrology.

Getschow, George. "Biblical Petroleum: Prophets and Profits Motivate Evangelicals Hunting for Israeli Oil." *Wall Street Journal,* Aug. 22, 1985, p. 1. In-depth report on the hundreds of evangelical Christians from America's Bible Belt who are investing millions in Israel in hopes of finding the world's largest oil deposit, based not on geophysical studies but readings of the

Scriptures and the words of evangelical prophets.

Greyson, Bruce. "A Typology of Near-Death Experiences." *American Journal of Psychiatry* 142(8): 967-969, August 1985. Differentiates "near-death experiences into three distinct types. Reports a cluster analysis of 89 such experiences and the typology resulting from it.

Lawson, Anton E., and Elmer A. Kral. "Developing Formal Reasoning through Study of English." *Educational Forum,* 49(2): 221-226, Winter 1985. Presents ten practical teaching procedures to encourage reasoning skills.

Lucas, Ward. "Police Use of Psychics: A Waste of Resources and Tax Money." *Campus Law Enforcement Journal,* July-August 1985, pp. 15-21. Excellent article on the misinformation surrounding claims that psychics help police solve crimes. Includes several case studies showing how wide of the mark the psychics are. Also includes analysis showing how psychics often plausibly develop an intense belief that they have psychic abilities; this belief in turn helps make them believable to others. Discusses other reasons why well-educated police professionals, politicians, and even newsmen often end up believing something paranormal has happened. Nevertheless, says the author, a Denver investigative reporter and TV anchorman, psychic abilities haven't been demonstrated, and the use of psychics by well-meaning but gullible police would be amusing if it didn't divert investigators from solid police work.

McKusick, Marshall. "Psychic Archaeology from Atlantis to Oz." *Archaeology,* 37(5): 48-52, September-October 1984. Good article on the vogue for "psychic archaeology." Traces much of the interest to devotees of Edgar Cayce. Includes critical discussion of Goodman's *American Genesis* and Schwartz's *The Alexandria Project,* which McKusick calls "extraordinarily misleading" and "a casebook of phony visions."

Rickup, Roger. "To Land a Position in Paris, Penmanship Can Be Paramount." *Wall Street Journal,* Sept. 3, 1985, p. 1. Report on the widespread use of graphology by businesses in France. Reveals that at least 80 of France's 100 biggest companies use graphology in hiring, especially for executives and professionals.

Royko, Mike. Chicago Tribune Syndicate, distributed to newspapers September 1985. Column on the $9-million lawsuit against the Maharishi Mahesh Yogi by seven people who accuse him of failing to deliver on a promise to teach them how to fly.

Smith, Jack. [Untitled columns] *Los Angeles Times,* Aug. 20 and Sept. 3, 1985. An acerbic column, and a followup about reaction to it, poking fun at the San Francisco Board of Supervisors for calling in psychics to help them find two patas monkeys that escaped from the city's zoo. (The monkeys were recaptured but not because of any paranormal help.) In the second column Smith stands fast against reproaches for his disbelief in psychics, refers readers interested in scientific studies on the matter to *SI,* and points out that James Randi's $10,000 prize for a scientific demonstration of paranormal powers under scientific conditions remains unclaimed.

Stacy, Dennis. "UFO Update." *Omni,* November 1985, p. 91. Brief piece on the hard times that have hit UFOlogy. UFO organizations are shriveling up and dying. Reveals that a British book called *Sky Crash: A Cosmic Conspiracy* was turned down by 21 American publishers.

—*Kendrick Frazier*

From Our Readers

The letters column is a forum for views on matters raised in previous issues. Letters are welcome and are more likely to be published if they are brief and typed double-spaced. Some may have to be edited.

Firewalking and physics

I read with pleasure the very useful pieces on firewalking by Leikind, McCarthy, and Dennett (*SI*, Fall 1985). The extremely low heat content and poor conductivity of dehydrated wood coals, even at very high temperatures, is a widely unappreciated fact, and it is probably the dominant factor in the firewalker's failure to suffer burns.

In thinking of wood coals and skin, one tends to rely on the analogy of a red-hot bar of iron burning a hapless piece of paper. This is a mistake. An analogy much closer to the firewalking case would be a small red-hot piece of *paper* trying to "burn" a large cool piece of iron. The energy exchange upon contact instantly reduces the paper's temperature drastically, while raising the iron's temperature only slightly.

If we include the Leidenfrost effect, which I suspect plays a relatively minor role, then we have addressed conduction, convection, specific heats, and latent heats. But I notice that the authors do not mention thermal *radiation* as an important factor in the overall scam. It does come in, I suggest, in three different ways. First, the burst of thermal radiation one feels on one's face upon confronting a bed of coals is familiar and frightening: We have all hovered warily over a glowing barbecue. And one there expects that if one moved steadily closer to the coals, the "heat" would increase in lethal proportion. However, there is a commonly unappreciated fact about radiating surfaces that is directly relevant here. Once one gets fairly close to such a surface (so that it approximates the effect of an "infinite plane"), the received radiant heat *does not increase* with any further approach. The amount of heat a target receives remains roughly constant with variations in distance, as any frustrated cookout chef knows who has tried to accelerate his slow steak by lowering the grill toward the tiring coals.

For a point source of heat, distance makes a big difference (intensity varies as $1/R^2$). But for a large radiating *surface,* distance makes almost no difference. As one approaches any given point in a plane, its effect certainly increases, but the effects of the outlying parts of the plane *decrease* in equal proportion. (In effect, they are tilted away from you.) The surprising result is that a foot held ⅛ inch above the coals receives no more radiant heat than does a hand placed a full foot or two above them! And there is certainly no problem in doing the latter for several seconds.

Second, the radiant heat received by the foot actually drops upon contact with the source, and drops substantially. As heat flows from a coal into the foot by direct conduction, the temperature of that coal drops considerably (it has a very low specific heat, recall). This drop shows up in the telltale dark footprints left after the foot moves on. Now, the radiant heat varies as the *fourth power* of temperature. If the coals' temperature drops immediately to, e.g., ½ of its initial absolute value upon contact with the foot, the radiant heat it emits will fall to $(1/2)^4$, or only 1/16th of its initial value. One is trading radiant heat for conducted heat, of course, but the important point is that the foot does not have to deal with *both.*

Third, the visual and facial impression of great heat is much enhanced by

the fact that the organizers of firewalking sessions wisely schedule them in the cool and dark of night, when the visual and thermal contrasts with the background environment are maximized. Were the sessions to be held on a beach in the blazing afternoon sun, almost all of the magic would disappear. The coals wouldn't even look red, but only a dull ash-white, like spent barbecue coals.

Together, these three factors mean that, when the neophyte firewalker extrapolates, from his or her facial sensations, to the expected thermal onslaught at the foot, he or she exaggerates wildly the actual result. The result, therefore, is found amazing. But it isn't amazing. It is merely the charming reflection of some unfamiliar physics.

However, I do *not* wish to suggest that firewalking is without serious danger. To the contrary, wood coals vary widely in their thermal properties, and so do feet. Dangerous combinations are inevitable, and firewalking remains a borderline undertaking at best. The physics cited above merely explains why most of us would escape with little more than a flushed face.

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The excellent article by Leikind and McCarthy on firewalking omitted an important reference. In 1957 Mayne Reid Coe, a chemist, reported in the *Psychological Record,* 7:101-110 (and earlier in *True* magazine), similar explanations for firewalking and various other acts involving hot objects. Coe himself had accomplished most of these, including the handling of red-hot iron and glass. The editor of the journal reports that he has visited Coe and observed demonstrations of some of these. Coe also gives an account of historical acts of this sort. Readers of the SKEPTICAL INQUIRER will find this a useful supplement to the literature on this topic.

Perhaps in the near future we will be hearing of other dramatic and dazzling feats by charlatans, such as being buried alive, walking on water, and the Indian rope trick. John A. Keel tracked down the techniques used in India in these tricks and others and reported them in his book *Jadoo,* published in 1958 by W. H. Allen, London. Skeptics might find it helpful to read Keel and be prepared.

Noel W. Smith
Dept. of Psychology
State University of New York
Plattsburgh, N.Y.

After reading your articles on firewalking, I find myself wishing I could attend a seminar on that "remarkable" art.

I would show up with an eager look, my best socks, and a large paper bag. I would wax enthusiastic, if a *bit* nervous, and ask how *long* one is actually on the fire and how *hot* it will be. I would of course ask questions that would allow the pros to assure all concerned that ya just gotta *believe.*

I would then reach into my paper bag, with the comment that I'm damn glad to be in the hands of a fella so bubbling with confidence that 2 to 4 seconds on a 1,200° fire is as risky as a good snooze, and I would drag out my trusty hotplate, plug it in, and beg that the gent give us a preview, an easy item, by standing on a mere 350° for a couple of seconds.

What could possibly be fairer? Or funnier?

Mark McDermand
Tamal, Calif.

I was pleased to read the recent article on Tony Robbins and his firewalking workshops; I personally consider his flamboyant manner and immodest claims with respect to Neuro-Linguistic Programming (NLP) distasteful and, ultimately, detrimental to the testing and potential acceptance of NLP by the academic/scientific community (of

which I count myself a skeptical member). I would also like to commend authors Leikind and McCarthy on their ability to separate Robbins's exploits from the model that he purports to use.

As a person who finds many of the techniques of NLP useful in both social and professional settings, I would urge anyone who wishes to consult NLP professionals to contact the National Association for NLP (496 LaGuardia Place, Suite 137, New York, NY 10012) for information on locating qualified, responsible practitioners.

The SKEPTICAL INQUIRER continues to be on my must-read list; keep up the good work!

Michael Eric Bennett
The Communications Cooperative
East Lansing, Mich.

Your articles discussing firewalking reminded me of a photograph that appeared in *Popular Science* several years ago. Illustrating the extremely low density and heat conductivity of a new insulating material that was being used on the space shuttle, it showed a glowing-hot block of the material being held—quite comfortably—in a technician's bare hand. No mystical assistance in performing this feat was mentioned.

Karl Bunker
Boston, Mass.

The Saguaro photograph

I enjoyed Lee Roger Taylor and Michael R. Dennett's investigation into the Saguaro Incident (Fall 1985). It is not necessary to have a fireball, UFO, or meteor present to get a photograph similar to the one on page 71 of the SKEPTICAL INQUIRER. If you leave your camera lens open for a time exposure and walk around to the front of the camera then fire the flash directly at the camera you will get the same result. The white line could be made by walking with a torch (flashlight) pointed at the camera.

Given that the photographer admitted that he was using a flash, my explanation seems quite possible.

Mark Plummer
Melbourne, Australia

Instinct to invent 'knowledge'

Again (Fall 1985) the SKEPTICAL INQUIRER disproves or challenges the dishonest and discounts the untested claims of the paranormal. So far so good, but the problem is resilient and unduly persistent. Perhaps *SI*'s effort is too narrow, treating symptoms only, and should be enlarged to focus also on the underlying causes for the wide acceptance of and the refractory belief in pseudoknowledge, whether derived through ignorance or through fraud.

With intent to provoke, I'll suggest that the problem stems from an instinctive and unconscious compulsion to cheat "chance," to ensure survival by any available knowledge. Where reliable knowledge lacks authority, is neutral, or is simply missing, the needed "knowledge" will be invented out of hand and be lent subjective authority. This instinct obtains to the species, but its exercise is reserved to the individual. Several factors may contribute, but the persistence of invented knowledge is mainly due to reliable (scientific) knowledge embracing the "enemy" chance and thus denying the instinct to cheat the odds.

Skepticism is necessary and the challenging of paranormal claims is appropriate, but do pursue also research into causes. Only with their determination will development of a cure become possible.

George J. Neuerburg
Lakewood, Colo.

Abuse of Aristotle?

Your reviewer, with evident approval

(Summer 1985, pp. 376 f.), reports Medawar's claim in *Pluto's Republic* that "Aristotle's conception replaces scientific truth by . . . a truth so lofty that if nature does not conform to it why then so much the worse for nature." This is, bluntly, false. Aristotle's error (if it is one) was the exact opposite: He tied himself too closely to what observably happened and did not trust lofty reasonings if they seemed to contradict the observations of well-informed and healthy people. It was Copernicus, as Galileo pointed out, who "committed a rape upon his senses" in the conviction that God's handiwork must reflect His Own simplicity.

Why do so many scientists feel entitled to abuse Aristotle, without ever (so far as can be seen) troubling to investigate what the man said?

Stephen R. C. Clark
Dept. of Philosophy
University of Liverpool
Liverpool, England

Fox sisters

I apparently made an error in the article on the Fox sisters (Fall 1985). Kate Fox (p. 66) married H. D. Jencken from Boston, not W. R. Hayden. She did go to London and did carry out her demonstrations, as did Mrs. Hayden, who was also from Boston. The Society for Psychical Research therefore did not gloss over the fact that Mrs. Hayden was a Fox sister. They simply just ignored the visit of Mrs. Jencken. I apologize for the error.

Vern L. Bullough
State Univ. of N.Y. College
Buffalo, N.Y.

Loch Ness

Martin Gardner (*SI*, Summer 1985, p. 322) stated that Razdan and Kielar carefully monitored Loch Ness after (*sic*) finding the evidence for Nessie "to be near zero." What they stated was that they mounted their own expedition partly because they found the "copious" data of questionable accuracy. It was their own expedition that found zero evidence.

David Healey (p. 395) should note that there is no reason to suppose that Sir Peter Scott had his tongue in his cheek when he (and Robert Rines) assigned the classification *Nessiteras rhombopteryx* to the alleged Loch Ness Monster. It is merely unfortunate that one anagram is "Monster hoax by Sir Peter S." To the list of anagrams so far discovered I would like to add "Strobe exposes a myth in RR"!

Steuart Campbell
Edinburgh, Scotland

Skeptics and scholars

Your journal is both important and entertaining. The only description many of your writers use too often and that bothers me is something like "skeptic" = "scientist." I'm a skeptic (from way back) but *not* a scientist. I'm in the humanities (specifically, Classics). We can be logical people, too, just as some scientists can be illogical (or easy to fool) people. And if you people (skeptical readers and writers) want to teach your children, students, and/or neighbors, I think it's important for you to learn persuasion and rhetoric and not just scientific facts; otherwise the believers (nonskeptics) won't even listen to us in the beginning.

At any rate, I'd like to join a local CSICOP organization (in Massachusetts or New England). Is there one yet? I'd be happy to host the first meeting at my college but it really would be better if someone in Boston could be the host. However, do write me, anyone of you in the New England wilderness—and I'll try to find a time and place.

Dorothea Wender
Professor and Chair
Dept. of Classics
Wheaton College
Norton, MA 02766

Local Organizations

(groups with aims similar to CSICOP's)

Arizona

Tucson Skeptical Society (TUSKS), Ken Morse and James McGaha, Co-chairmen, 2509 N. Campbell Ave., Suite #16, Tucson, AZ 85719.

California

Bay Area Skeptics, Robert Sheaffer, Chairman, P.O. Box 2384, Martinez, CA 94553.

Sacramento Skeptics Society, Terry Sandbek, 7988 California Ave., Fair Oaks, CA 95628.

San Diego Skeptics, R. W. (Ernie) Ernissee and Elié Shneour, Co-chairs, Box 17566, San Diego, CA 92117.

Southern California Skeptics, Al Hibbs, Chairperson, Al Seckel, Executive Director, P.O. Box 7000-39, Redondo Beach, CA 90277.

Colorado

Colorado Organization for a Rational Alternative to Pseudoscience (CO-RAP), Béla Scheiber, Director, P.O. Box 7277, Boulder, CO 80306.

Idaho (see Oregon-Idaho)

Minnesota

Minnesota Skeptics, Robert W. McCoy, 549 Turnpike Rd., Golden Valley, MN 55416.

New York

New York Committee for Skeptical Inquiry (NYCSI), Terence Hines, 51 Westchester Ave., Thornwood, NY 10594.

Ohio

South Shore Skeptics, Page Stephens, 1346 W. 64th St., Cleveland, OH 44102

Oregon-Idaho

Northwest Skeptics, John Merrell, Oregon-Idaho Coordinator, P.O. Box 5027, Beaverton, OR 97007.

Pennsylvania

Paranormal Investigating Committee of Pittsburgh (PICP), Richard Busch, Chairman, 5841 Morrowfield Ave., #302, Pittsburgh, PA 15217.

Texas

Austin Society to Oppose Pseudoscience (A-STOP), Lawrence Cranberg, President, P.O. Box 3446, Austin, TX 78764.

Dallas Society to Oppose Pseudoscience (D-STOP), James P. Smith, Science Div. of Brookhaven College, Dallas, TX 75234.

Houston Society to Oppose Pseudoscience (H-STOP), Steven D. Schafersman, Chairman, P.O. Box 541314, Houston, TX 77254.

Washington

Northwest Skeptics, Michael R. Dennett, Chairman, Washington Coordinator, 4927 SW 324th Place, Federal Way, WA 98023.

West Virginia

Committee for Research, Education, and Science Over Nonsense (REASON), Steven Cody, Chairperson, Dept. of Psychology, Marshall University, Huntington, WV 25701.

The Committee for the Scientific Investigation of Claims of the Paranormal

Paul Kurtz, Chairman

Scientific and Technical Consultants

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The Committee for the Scientific Investigation of Claims of the Paranormal

The Committee for the Scientific Investigation of Claims of the Paranormal attempts to encourage the critical investigation of paranormal and fringe-science claims from a responsible, scientific point of view and to disseminate factual information about the results of such inquiries to the scientific community and the public. To carry out these objectives the Committee:

- Maintains a network of people interested in critically examining claims of the paranormal.
- Prepares bibliographies of published materials that carefully examine such claims.
- Encourages and commissions research by objective and impartial inquiry in areas where it is needed.
- Convenes conferences and meetings.
- Publishes articles, monographs, and books that examine claims of the paranormal.
- Does not reject claims on a priori grounds, antecedent to inquiry, but rather examines them objectively and carefully.

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